THE

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JANUARY, 1869.

NOTE ON AN ADULTERATION OF OPIUM.

By James T. King.

On examining a late purchase of opium, I noticed, on breaking open one of the larger pieces, that it was much less tenacious or adhesive than opium usually is when containing the amount of moisture generally found in it.

Although having much more of the fragments of poppy capsules and leaves mixed with it than a good article should, yet this would not account for the peculiar brittleness, or want of tenacity in the opium, and it was evident that the drug was adulterated.

A portion of the piece was triturated with cold water until well broken down, and then alcohol, equal in measure to the water used, was added and allowed to macerate for several days. It was then transferred to a percolater, and after the tincture had passed through, water was added until the drug was exhausted of all soluble matter.

The residue was transferred to a beaker and thoroughly agitated with water, and allowed to rest for a few minutes until the heavier portion of the drug had subsided. The water, holding the finer part of the insoluble matter diffused through it, was decanted into a filter and the precipitate collected and dried.

On submitting this to an examination with a microscope, the finer portion was found to consist of *starch*. The starch granules differed, however, from any of our more common starches

being larger than those of wheat or corn, and smaller than those from the potato—approaching more nearly the starch from the bean, both in size and form.

With iodine the characteristic blue of the iodide of starch was obtained.

The starchy matter formed about 14 per cent. of the moist opium.

MIDDLETOWN, N. Y., Nov., 1868.

VACUUM MACERATION:—DUFFIELD'S PROCESS FOR FLUID EXTRACTS.

BY THE EDITOR.

For some time past the Medical Journals of the West and North, have had notices of a class of fluid extracts known as "Duffield's," claiming for them great merit as being prepared without heat or evaporation. We have not seen these preparations, but being interested in all improvements in pharmaceutical processes, we wrote to Dr. Duffield for information in regard to his process if he was disposed to give it, so that the merits of the process, if any, might be known to the revisors of the Pharmacopœia, and the following is in substance his reply:—

DETROIT, Mich., Oct. 6th, 1868.

"*Dear Sir.*—Your favor came duly. * * * * * * As regards *my process*, it is not patented. It differs from Dr. Squibb's in my *not percolating;* it differs from Thomas' in every respect, except that I use a press. The whole thing you will appreciate, although it is difficult to make every M. D. understand when I say it is a *vacuum maceration.* I macerate in vacuo, *cold*, using the menstrua of the Pharmacopœia and expressing with hydraulic pressure until I get one pint for one pound of dry ground drug. All I claim in way of novelty is maceration in vacuo for 6 to 10 days, and expression, allowing the liquid to settle in carboys of glass and decant clear with glass syphons and bottle.

"I am satisfied that percolation, as carried on in large establishments, with a class of workmen usually employed, gives very variable results. * * * It takes more alcohol to work my way, but it gives fluid extracts on the large scale equal to those I made when in the drug business from your published formulæ. I enclose [the printed account of] my process, and will be happy to give you more light on the subject.

Yours, &c.,

S. P. DUFFIELD."

The following is the printed account of the process received from Dr. Duffield.

"The drug ground to the requisite fineness is introduced into a strong cylinder, connected with an air pump and the air exhausted; through a syphon tube the requisite amount of menstruum is allowed to be sucked into the vacuum chamber. When we exhaust the air from the tight cylinder, the pores of the comminuted drug give up the air enclosed in them, and when the menstruum is allowed to flow in, it is forced into these pores by the pressure of the air outside. In this way we arrive at a more perfect maceration than by any other method heretofore adopted."

The moist macerated mass is then subjected to pressure to expel the absorbed solution of the soluble matter of the drug, which is made to measure a pint from each 16 troy ounces, by experimental trial of the quantity of menstruum needed to obtain that result.

We have not tried this process, nor have we seen the preparations it affords, but judging from our experience with drugs and solvents we see no reason why the process should not afford a good extract; yet we are not prepared to admit that it is equally efficient with *percolation* properly carried out. The column of powder, in a properly arranged percolater, which has been previously moistened and packed, offers *all* its soluble matter to *each* stratum of the descending column of menstruum, as it passes down slowly through the pervious mass, and the first portions of such percolate must necessarily be saturated solutions. As these heavily loaded portions pass out, the percolation proceeds more readily, because less impeded by soluble matter, and if the fineness of the particles has been properly attended to, so that the process regulates itself with sufficient slowness to give time for the full solvent action of each portion of the menstruum on the entire mass of the powder, there seems no possibility of failure to obtain more highly concentrated solutions than in any other way except by evaporation. Spencer Thomas' process simulates this action by moistening the powder with successive small portions of menstruum, with intervening subjection to great pressure, so as to extend the solvent action of each fraction to all the powder; but the success of this idea is met by a practical difficulty in gaining the requisite force, and in fact does not approach the efficiency of percolation in experienced hands.

As regards the alleged advantage of the vacuum in removing air particles that prevent the contact of the solvent and powder in the cellules of the drug, it may hold good in unbroken tissues, as in kyanizing wood with metallic solutions; but in operating with a fine powder so closely packed as to render the action capillary, this air is driven out by the descending liquid like a piston in a syringe, and its place temporarily occupied by the liquid, which in its turn, by gravity and pressure of the column above, passes down from particle to particle, invading the ruptured cell structure of each till it attains saturation, after which it does not increase in density. There is much to be learned in the relation of solvents to organic matter in the process of percolation, and its practice is so entirely adapted to the shop and within the ability of the pharmaceutist to study with care and advantage, that it is greatly to be desired that it will be retained as the process of solution *par excellance*, and not substituted by mechanical methods dependent on costly apparatus, and which necessarily throws the preparation of many important classes of medicines into the hands of large manufacturers. Further, we do not believe that evaporation necessitates destruction of medicinal power, when properly conducted, by adapting the method and temperature to the nature of the substance treated.

REMARKS ON THE PREPARATION OF DEODORIZED TINCTURE OF OPIUM.

By Philip L. Milleman.

The May number (1867) of the *American Journal of Pharmacy*, contains a paper by Albert E. Ebert, on deodorized tincture of opium, wherein he advocates the use of benzine for that of ether, as a means of deodorizing this valuable preparation of opium. Since the publication of this paper, I have frequently had occasion to make this tincture in large quantities, and have, by following Mr. Ebert's process, been successful in producing a uniform and good preparation.

I therefore endorse the advantages the author claims for his process over that of the U. S. Pharmacopœia in regard to time

and cost of tincture thus prepared. Still I find a modification of Mr. Ebert's process, when operating on larger quantities, advantageous, viz: 1st. That of using less water for the exhausting of the opium. 2d. Less quantity of benzine to deodorize the watery solution. 3d. Heat not being necessary excepting sufficient to drive off the benzine. It is as follows: Take of opium, dried, in moderately fine powder, by 10 troy ounces; benzine, pure, 3 pints; alcohol 2 pints; water a sufficient quantity. Macerate the opium with 2 pints of water for 24 hours, and express; then repeat the operation twice with the same quantity of water, mix the expressed liquids in a bottle, and add the benzine, shaking it repeatedly after separation of the liquids; decant the benzine, and evaporate by a gentle heat until all traces of benzine have disappeared; filter through paper, adding sufficient water to make the filtered liquid measure six pints; lastly, add the alcohol and mix them together.

CHICAGO, Dec., 1868.

A NOVEL METHOD OF CATCHING MICE.

Having on several occasions noticed mice in our seed barrels, I bethought me of some method of how I might trap the little intruders; they having gained entrance by eating through the chime. To kill them with a stick was impracticable, as the little fellows would invariably escape as soon as the lid was raised to any height. I then thought of saturating a piece of cotton with chloroform and throwing it in and then closing the lid. On raising it again in a few minutes, I would find that life had almost or quite departed. Having on one occasion left the piece of cotton in the barrel, on again returning, found three little mice with their heads in close contact with it, and dead. In the evening I saturated another piece and placed it in the barrel, and on opening it the next morning to my surprise I found *nine dead mice.*

Each coming from his father's hall
To feast at night, securer more
Than in the light of day.

LEAVENWORTH, Kansas, Oct. 8th, 1868. J. H.

ON SYRUP OF TAR.

By J. B. Moore.

Tar is a very popular domestic remedy, and is also very highly esteemed by many medical practitioners in the treatment of the various chronic, pulmonary and bronchial affections so prevalent during the damp, cold and changeable weather of the winter and spring seasons in our climate. It is also very useful as a diuretic in certain diseases of the kidneys and bladder.

All of the published formulas for the manufacture of the syrup of tar yield preparations entirely too feeble in the properties of tar to possess much medicinal activity or value; and as the season is approaching when remedies of this class will be in demand, I thought it would not be amiss to offer to the profession a formula which, if carefully and skillfully manipulated, will afford an excellent and efficient syrup. The following formula I have employed, with but slight variation, for the last ten or twelve years:

℞.	Tar (strained)	℥ j	(troy.)
	Pulv. sugar (refined)	℥ xij	"
	Magnesia carb. (rubbed to powder on a sieve)	℥ iij	"
	Alcohol,	f℥ ij	"
	Water, quantity sufficient.		

Mix the alcohol with six fluidounces of water, rub the tar, in a mortar of sufficient capacity, with one troy ounce of the sugar, and then with the carbonate of magnesia gradually added until the whole is reduced to a uniform pulverulent mixture. To this gradually add, with constant trituration, which should be continued for fifteen or twenty minutes, four fluidounces of the mixture of alcohol and water, then strain with strong expression. Return the residue to the mortar and again triturate, first with one troy ounce of the sugar, and then with the remaining four fluidounces of the mixture of alcohol and water, gradually added as before; finally strain and strongly express, and then reduce the dregs, by trituration, to a smooth and uniform condition, and pack firmly in a glass funnel prepared for percolation and adjusted to the neck of a graduated bottle containing the remainder of the sugar, and pour upon this the

expressed liquid, and when it has all disappeared from the surface, continue the percolation with water until the whole measures one pint. Agitate occasionally until the sugar is dissolved, and strain if necessary. Dose from a dessert- to a tablespoonful.

The cost of the materials to make one pint of this syrup is about thirty cents.

The strained tar, such as is usually sold in gallon cans, answers well for this purpose, but when it is not at hand the crude tar may be dissolved in a small quantity of ether and strained, and the ether allowed to evaporate spontaneously.

This syrup may be made without the use of alcohol, if desired, by substituting water for the latter and increasing the amount of sugar to about fifteen troy ounces; but the amount of alcohol in the preparation being so small that it is not therapeutically objectionable, while it greatly assists in exhausting the tar of its medicinal virtues.

Philadelphia, October, 1868.'

NOTE ON QUINIA PILL MASS.

By Wm. P. Creecy.

Mr. Editor, I desire to present to your consideration a method that is in use in our prescription department as a more speedy and elegant way of dispensing quinine in recipes where pills are directed.

We are in the habit of keeping prepared a "quinine mass," made by breaking up the crystals of the quinine with dil. sulph. acid, and making up the mass with honey and glycerin in the proportion of 2 parts of honey to 1 of glycerine. This mass will contain about 15 per cent. of extra weight, and by using 1½ grs. additional in every 10 of quinine you can obtain the amount of quinine prescribed.

The advantages claimed for this preparation are its "plasticity," ready solubility in the stomach, the economy of time in the dispensing of all quinine recipes, and the diminution in bulk of the pill.

Not being aware of this method being in use generally, I give it for your approval.

Vicksburg, Miss., Nov., 1868.

THE PARIS EXPOSITION OF 1867.

By the Editor.

[Continued from page 540, vol. xl.]

In attempting a notice of some of the objects of interest to the pharmaceutist and druggist, collected together in the Paris Exhibition of 1867, it is with no intention of giving much detail, or of entering closely into the merits of particular classes of articles—none but *jurymen*, who were permitted to handle and take samples of specimens, for closer observation, could do this in a reliable manner: our object is mainly to convey an idea of the general character of the Exhibition, as regards chemicals, drugs, apparatus and other objects more or less connected with the business of the pharmaceutist. Occasionally we shall wander from the path thus appointed, and we do not pretend to confine ourselves to notes taken on the spot, using the general official catalogue, special catalogues and correspondence, when these will aid our purpose. As stated before, our notices will be chiefly confined to Group V, which includes the classes from XL to XLVI. As a general rule, the articles in the 44th class (chemical and pharmaceutical products) were in the concentric gallery, immediately within the large exterior apartment containing the machinery in motion. The manner of arranging articles varied with individuals and nationalities, but was generally in upright glass cases, with shelving within so as to avoid the dust, whilst in the centre other glass cases of varied form were ranged, within which the most brilliant and important specimens were often found. For some reason, not very apparent, the British section was not well lighted, and the cases were mostly dark colored. This effect is in part due to the management of the interior and partly to this section being shaded by the taller exterior gallery to the south and west, all the light coming from above.

In the very brief notice of this building in our last it should have been stated that the domain of each nation was bounded by lines running from the central court to the circumference, so as to embrace apartments in each of the seven groups, consequently the visitor, by passing along these radiating streets, as they were called, could pass in review the productions of each country of every kind, whilst by following the concentric avenues he could examine the same class of articles as made by all the countries exhibiting. The latter was the order generally preferred by those who entered systematically into an examination of the Exhibition. There were 16 of these radial streets. The main avenue, opposite the Bridge of Jena, was called the Vestibule, and proceeding to the left, through the French department, one passed Rue d'Alsace, Rue de Normandie, Rue de Flandres, Rue de France, Rue de Lorraine, Rue de Provence, Rue des Pays Bas, Rue de Belgique, Rue de Prusse, Rue d'Autriche, Rue des Suisse, Rue de Russie, Rue d'Afrique, Rue des Indes and Rue d'Angléterre. Of the space thus divided into 16ths, France

occupied seven, Great Britain two and a half, Belgium, Prussia and Germany each one, Austria and Switzerland one, Spain, Portugal, Denmark, Greece, Sweden, Norway and Russia another, Italy, Turkey, China, Japan, Persia and Africa another. whilst the United States, Mexico, Brazil and the South American republics together occupied but the half of a 16th. It will thus be seen that France and England, situated on either side of the main entrance, occupied more than half of the building, and exhibited the most extensive and varied collections.

In class 44 there were about 1582 exhibitors, of whom 358 were French, 108 English and only 30 Americans. Austria had 150, Italy 199, Prussia 125, Turkey 98, Belgium 85, Russia 71, Holland 40, Spain 57, Brazil 98, Algiers 44, Switzerland 37, Sweden and Norway 38, the remainder being distributed among ten or twelve other nationalities.

The French Section.—The manufactures of Class 44 in this section represent a gross annual production in France of 240,000,000 of dollars, including all chemical and pharmaceutical products, whether used in medicine or the arts. Among the depositors of pharmaceutical products M. Menier, of *Paris*, made an extensive display. He is widely known as a druggist and manufacturer of pharmaceutical preparations. The collection was rich in alkaloids and organic principles, among which strychnia, brucia, cocaina, codeia and the cinchona alkaloids were prominent, the strychnia in unusually large crystals, vacuum extracts, powders, etc., including the froth like extracts of French pharmacy, made in vacuo.

M. Berjot, of *Caen*, exhibited a series of these extracts particularly noticeable, together with beautifully dried leaves, flowers, roots, etc., prepared for dispensing, and expressed oils of croton seeds, castor beans and almonds.

M. Guilliermond & Son, of *Lyons*, had a variety of chemical and pharmaceutical preparations of conium, cinchona, etc., and the apparatus used by him in assaying cinchona barks.

M. Dorvault's collection was quite extensive, including many salts of alkaloids, among which valerianate of quinia was conspicuous. Permanganate of potassa and other mineral salts were well crystallized.

M. Dorvault, author of "d'Officine," a French dispensatory, has long been the Director of the *Pharmacie Central de France*, an extensive establishment in the east central portion of Paris, not far from the Seine, where every need of the dispensing pharmaceutist is supplied, from the rarest organic and mineral chemicals to the most complex syrups or theriacs of earlier pharmacy. Taking advantage of an invitation, and the company of our friend Dr. Jenkins, of Louisville, we entered this establishment, on a forgotten street, about noon, as the card indicated, and were received in the office very politely by M. Dorvault, who personally conducted us through the entire establishment, including the packing rooms, the wholesale department, where orders are filled ready for packing, the store-rooms, where drugs were kept in bins, barrels and cans,

all labelled in good order, the rooms where operators were bottling and putting up vials and packages, and, above all, room's for storing herbs, flowers, leaves, etc. We then were shown through the cellars, where various heavy and crude articles were kept; into the fire-proof ether and spirit cellar, where combustible liquids are stored for greater security, and into that where mineral preparations were deposited, from which we ascended and crossed the court-yard to the laboratory. In doing so we were shown the apparatus for calomel and some other mercurials, and that for reducing iron by hydrogen. The latter consisted of four iron tubes, about four inches in diameter, open at both ends, which were supported by nine inch walls, through which they passed, the lateral walls being low, so as to make it easy to remove the fire when the process is finished. The process was not in operation, and we did not learn what was the source of the hydrogen employed, but we presume the process to be nearly identical with that of our Pharmacopœia. In the first story the range of apartments was occupied by the boilers and a very efficient steam engine, communicating power to various parts of the building, and heat for evaporation, distillation, dessication, etc., in numerous forms of apparatus for extracts, syrups, spirits, ethers, etc. In the second story we passed through the analytical laboratory, where constant experimental trials and testings are carried on in connection with the business of the concern. Passing on we came to the apartment devoted to the preparation of gelatin capsules, sugar-coated pills, dragees, lozenges, tablets, gum drops, etc., where the operatives were both female and male; empty capsules are arranged on trays and are taken up, one at a time, and quickly filled from a glass with a tubular spout and replaced on the tray ready for sealing. The lozenge machine is very perfect, first rolling out the mass and then passing it under rollers, where it is cut into lozenges and stamped. Gum troches are moulded in starch powder, shallow boxes of which, pressed full of conical cavities, are used as the matrices, the starch repelling the stiff mucilage and sugar till it sets. The process for sugar-coating pills is that used here in our pill laboratories, and which we derived from France. Above this pharmaceutical department the finer chemicals and preparations are put up and stored. At the top range of the building M. Dorvault introduced us to the museum of materia medica and chemicals, and finally to the library, where the members of the Association, for it is a joint stock company, have their meetings. The impossibility of taking notes at the time, and the many other engagements, prevented a record being kept that might have been more interesting.

M. Dorvault is a man of medium height, well proportioned, and probably 45 years of age, of great personal neatness, wearing the black dress and white cravat so usual with the principal pharmaciens of Paris. His manner is composed, but assured, and he appears to be a perfect master of his business as Director of the large establishment over which he presides. Since our visit it has been announced that the celebrated firm

of Menier & Co., of *Paris*, have merged their extensive drug business into that of the Pharmacie Central.

Returning to our subject, we may allude to the assayed opium preparations, that are made with opium containing exactly ten per cent. of morphia, prepared by mixing different assayed opiums so as to make the mixture average ten per cent., exhibited by M. Adriani; and the preparations of calabar bean, physostigmin, or éserin, as he calls it, and various magnesian preparations, by M. Amidée Vée, President of the "Societé de Prévoyance des Pharmaciens," of Paris. This gentleman took a prominent part on the liberal side in the Congress of Pharmaceutists, and is a fluent and dignified speaker, reminding, us in many respects, of Prof. F. Gurney Smith, of the University of Pennsylvania.

Among the least prominent, but more important, objects was the apparatus and products of M. E. Deiss, of 63 *Rue de Bretagne, Paris*, consisting of bisulphuret of carbon and fats extracted by it. M. Deiss introduced the manufacture of sulphuret of carbon on a large scale, so as to use it as a solvent. The price formerly was six dollars a pound, which, through his process, was reduced to three cents per pound in 1867. Large quantities of oils and fats formerly lost are now rendered available from oil cake, and olive lees, the great volatility of the solvent rendering its recovery easy and leaving the albuminous residues useful for cattle food. At Marseilles, at the Carthusian friary, an immense extracting tank is in use, where, in 36 hours, about 1,000 bushels of the dregs, left by the olive oil presses, are treated with 45 tons of sulphuret of carbon, by percolation, which penetrates the whole mass, dissolving out the oil, and collects in the vessel below. The sulphuret retained in the dregs is then driven down by steam, after which the receptacle containing the solution of oil in the bisulphuret of carbon is connected with a condenser and, on applying steam, the sulphuret is regained, with a loss of only three or four per cent., leaving a residue of from thirty to thirty-five tuns of oil, fit for soap making, lubrication and other purposes. (*Chem. News*, vol. xv, p. 256.)

There were several samples of iron reduced by galvanic action in the Exhibition. M. Collas, of *Paris*, noted for his development of the benzole manufacture from coal tar, exhibited one of these obtained from the chloride in solution by one Bunsen pile. It was nearly black and so easily oxidisable that he put it in gelatin capsules. The other specimen was by M. Rousseau, of *Paris*, which had the grey tint of good iron by hydrogen, and is probably purer than that of Collas. Rousseau is a large manufacturer of chemical products and exhibited much that is interesting, as sodium, magnesium, rubidium and thallium. Much of the success in metallurgic operations with some of the newer metals, and in the use of the amalgam of sodium process for extracting gold, has arisen from his success in reducing the price of sodium. Pyrogallic and benzoic acids are also made on a great scale; of the latter, hundreds of tons are produced from the urine of herbivorous animals, collected around Paris, by the German method,

in which the hippuric acid is converted into the benzoic by the action of hydrochloric acid.

Armet de Lisle, of *Nogent sur Marne*, has a good display of quinine salts and other cinchona products.

Tessier de Mothey & Co., of *Metz*, exhibited fluosilicic acid and the fluosilicates of potash and soda, and these alkalies in a caustic state, and have introduced a process for extracting potash, based on their cheap furnace process for obtaining fluosilicic acid by the action of heat on a mixture of silica, clay and fluor spar, and conducting the gases into a chamber constantly wet, so as to decompose the fluoride of silicon and condense the fluosilicic acid. With this they extract the alkalies from their chlorides and sulphates.

M. Lamy, of Paris, in a very unpretending case, exhibited specimens of metallic thallium and its derivatives, among which was a thallium glass of great density and marked optical properties, and also ethyl-thallic alcohol of sp. gr. 3·600. There were other specimens of thallium in the Exhibition, particularly that of Mr. Crookes. Thallium was the metallic novelty of the English Exhibition of 1862. In the Paris Exposition, Indium, the newest of the metals, was the great chemical novelty. M. Richter, of Friburg, exhibited two bars of this metal, weighing more than a pound, and valued at $3,600. It looks like cadmium, and many of its properties are like it. It takes its name from the indigo-blue color of its spectrum line. A gold medal was awarded.

It will not do to pass by the unattractive collection of M. Robinet, the Secretary of the Paris Congress. It consists of waters of various sources, selected from among more than 2,000 specimens he has analysed, representing the rivers of France and many of the noted rivers of Europe. M. Robinet is engaged in the preparation of a hydrographic dictionary of France, and has laboriously pursued his investigations to render it a reliable text book on the potable waters of that country, treated geographically, geologically, chemically and in reference to agriculture and public health.

The collections of anilin dye colors in the French department were particularly brilliant. John Casthelaz & Co., of *Paris*, exhibited a rich collection of naphthalin and benzole derivatives by nitric acid, including anilin, picric and benzoic acids. They use the nitric acid from two tons of nitrate of soda per day in producing color bases from benzole and toluole, and in making benzoic acid artificially from naphthalin, one of the most ingenious and important new processes of productive chemistry. (For process see page 118 of this Journal for 1868.)

Coblentz Brothers, of *Paris*, had a beautiful collection, among which are nitrobenzol, binitrobenzol, binitrotoluol, toluyldiamin, paranilin, phenotoluol, etc. This firm have simplified the anilin process. The old Fuschine Company, of *Lyons*, exhibited magnificent specimens of muriate of rosanilin, and Messrs. Poirrier & Chappel, of *Paris*, showed their "Paris

violet," derived from the methyl anilin and dimethyl anilin of Dr. Hoffmann. Those who have compared the display of anilin colors of 1862, at London, with that of 1867, observed a wonderful improvement and extension, and they now include nearly all the colors of the spectrum.

Class 44 includes a large number of French pharmaceutical specialities, not a few of which must be classed with quackeries. Allied to these is the "oil of horse-chestnuts," of M. Genevoix, which he advertises for rheumatism. It is made by saccharizing the fecula of the kernels of horse-chestnuts, probably by the action of dilute sulphuric acid, when the fixed oil separates and floats on the solution, and is removed. Homolle, of *Paris*, the discoverer of digitalin, exhibits that substance, and Winsbach, of *Metz*, a good display of dried plants for medicinal use.

As a whole, the French Exhibition of Class 44 was very extensive and excellent, and said to be the largest display of chemicals ever brought together by a single nation. Classing them in groups, they included large chemicals, anilin colors, varnishes, albumen and gelatin preparations, paints, stearin and wax products, "insecticides," caoutchouc preparations, soaps and pharmaceutical preparations, in which are included the fine chemicals.

Perfumery.—In the line of perfumery and odors the French greatly excel all other nations, and although considered as a separate class (xxv), will here be noticed as allied to pharmacy. The business of perfumery consists of, 1st, the production of original perfume oils, spirits and fat odors, and 2d, the preparation of these in a hundred different ways for the toilet. The country lying between Montpellier and Nice is adapted to the raising of flowers, and, in fact, by far the larger portion of the extensive products of the Parisian laboratories come originally from the southern slopes of the Maritime Alps at Nice, Grasse, Cannes, etc. The exports of French perfumery amount to three millions of dollars, over and above the immense amount consumed in that country, whilst the imports were only two hundred thousand dollars in 1866.

Among the exhibitors of original products, A. Chiris, of *Grasse*, was prominent, exhibiting pomades, perfumed oils, essences and distilled waters. He has a branch garden in Algeria, which French colony has a climate well adapted to this business. Similar products were exhibited by D. Semeria & Co., successors of Rimmel, of *Nice*, J. Mero & Co., of *Grasse*, M. Fouque, of *Nice*, and M. Berjot, of *Caen*, but the more numerous exhibitors were those who made secondary products. Among these Rimmel made the greatest display, had a fountain of scented water, and in the Park had a little kiosk, where the process of distillation, enfleurage and other processes of the perfumer were exhibited. Piesse & Lubin, Coudrey, Piver, Guerlain and others, too numerous to mention, displayed a numberless variety of perfumes, pomades and articles pertaining to the toilet. We may return to this subject in a future article, after a notice of the British and German sections.

GLEANINGS FROM FOREIGN JOURNALS.

By the Editor.

True method of keeping the Syrupus Ferri Iodidi.—Mr. J. Hughes (of St. Leonards-on-sea, Sussex, England,) after various experiments in keeping the syrup of iodide of iron in glass-stopped, cork-stopped, and parchment-stopped bottles, and in cold, dark and light places, and in a warm place, arrives at the conclusion that this syrup keeps perfectly if, after being well made of thick syrupy consistence, it is covered with parchment and kept in a warm place. He decidedly condemns cold, dark cellars, as causing the syrup to darken in color, and objects to corks, owing to the tannin they contain.—*Pharmaceutical Journal*, Nov. 1868.

Poisonous Anilin Dyes. Several statements have appeared in the *London Times* tending to prove that some of the brilliant dyes derived from anilin are poisonous to the skin. So long as these colors were used only for dress goods this was not discovered, but recently socks and stockings have been dyed with them and worn to the detriment of some individuals. A report by Dr. Farrel to the *Times*, in May last, in the case of a Mr. M———, states:

"The question now rises, how fuschine, which has been used largely in dyeing for ten years past, has never been discovered to possess any poisonous property. The reply would be, that up to the present time it has been used only for articles of dress not coming in direct contact with the skin. The present is the first case in which I have met with fuschine used for stockings. The stocking is of all others the article of dress brought most in contact with the skin, around which it is, moreover, compressed tightly by the shoe. I must remark also that fuschine is soluble in weak acids. Perspiration is acid, and is nowhere more profuse than in the feet, where confined within the shoe it is absorbed by the tissue of the socks."

It was thought possibly that arsenic was concerned in the poisoning, as magenta (arseniate of rosein) contained it largely; but Mr. Crookes states that arsenic has nothing to do with it, as for several years they have ceased to use arsenic in anilin colors, but that all the injurious compound dyes contain *anilin orange*, which is the poisonous substance, having acid properties and rendered soluble by an alkaline solution; and directly con-

trary to Dr. Farrel, Mr. Crookes thinks that where the perspiration is acid in its normal state no danger exists; but that when the perspiration is alkaline, as in certain abnormal conditions, the dye would be absorbed and become active.—*Pharmaceutical Journal*, Nov. 1868.

Tincture of Pyrethrum Roseum. F. Jager, a German traveller in the East, after speaking of the well known "insect powder" derived from this plant, says (Brit. Med. Jour., May 30, 1868): "A tincture prepared by macerating one part of pyrethrum roseum in four parts of diluted alcohol, and when diluted with ten times its bulk of water, applied to any part of the body, gives perfect security against all vermin. I often passed the night in my boat on the ill-reputed rivers of Siam, without any other cover, even without the netting, and experienced not the slightest inconvenience. The 'buzzing,' at other times so great a disturber of sleep, becomes a harmless tune, and, in the feeling of security, a real cradle song. In the chase, moistening the beard and hands protects the hunter against flies for at least twelve hours, even in spite of the largely increased transpiration due to the climate." Mr. Jager found it specially destructive to ants, the great plague of tropical countries.—*Phar. Jour.*, July, 1868.

Poisonous exhalations from Quinces. A Lyons paper records the fact of death by asphyxia suffered by a lady who slept in a room, previously used as a bed-room, where a large quantity of quinces were stored. According to scientific evidence given in this instance, the air of the room was largely vitiated with a peculiarly suffocating perfume, and a very considerable amount of both carbonic acid and carbonic oxide gases. No fire had been lighted in it, nor was there any other discernible cause of death found but the exhalations of the fruit.—*Chem. News*, October 30.

Purification of Sulphuret of Carbon. M. Millon proposes the following method: the sulphuret of carbon is washed many times with distilled water, as in washing ether, then it is put in a large retort on quick lime. After twenty-four hours contact it is distilled on the lime and the sulphuret is received in a flask containing a large quantity of copper turnings, which have previ-

ously been deprived of adhering fatty matter by roasting and treatment with hydrogen. The lime on which the sulphuret is distilled has all the appearance of soda-ash; it is deeply colored.

When the sulphuret is thus obtained it has an ethereal odor when the nose is held near an open bottle containing it, which, though not perhaps agreeable, is very different from the infectious odor of the commercial sulphuret of carbon.

It was with sulphuret of carbon thus purified that M. Millon and M. Commaille have separated the perfume of the sweetest flowers, and in the same way the perfume of cow's milk, so as to detect certain plants eaten by the animals, the *Smyrnium olusatrum* among others.—*Jour. de Pharm.*, Nov. 1868.

On the solubility of starch, sugar and gum in Glycerin, by M. Vogel. When starch jelly is heated with glycerin it yields a cloudy solution, which deposits on cooling; the supernatant liquid contains starch in real solution. Glycerin also dissolves sugar and gum very well. One part of sugar requires two parts and a half of glycerin; and one part of gum three and a half parts of the same liquid.—*Jour. de Pharm.*, Nov. 1868.

Falsification of Gum Balls. M. Chevallier says that under the name of *gum balls* a mixture of glucose and gelatin has been found in French commerce. These balls are white without tint, of firm consistence and covered with crystallizable sugar; they are but partially soluble in water, and by maceration the balls become gelatinous masses, which retain their shape in a measure and do not cohere. By heat in water a gelatinous liquid is obtained, which tannin precipitates. True gum balls dissolve readily in the mouth and their solution is not precipitated by tannin.—*Jour. de Pharm.*, Nov. 1868.

On Syrup of Iodide of Iron. M. Jeannel (Bull. de la Soc. de Ph. de Bordeaux,) recommends the use of tartaric acid in small quantity to prevent the oxidation of the syrup of iodide of iron. This preparation, after remaining in contact with the air in a vial simply covered with paper during two months, was neither colored nor clouded, and gave no reaction of free iodine or of ferric oxide. The following is his formula:

Take of	iodine,	126·5	grains, troy.
"	iron filings,	61·7	" "
"	distilled water,	308·6	" "
"	honey syrup, (simple mellite),	1080·	" "
"	tartaric acid,	7·5	" "

Mix the iodine, iron filings and water in a matrass, then agitate till the liquid takes a green color, filter and add the mellite and tartaric acid.

This solution contains one-tenth of its weight of iodide of iron. Mr. Jeannel also states that the addition of one two-hundredths part of tartaric acid to colored syrup of iodide of iron clears it and removes partially its inky taste.—*Jour. de Pharm.*, Nov. 1868.

Crystallized Glycerin. M. Werner has succeeded in crystallizing glycerin anew, a quality of that substance which has been doubted; he succeeded neither by agitation nor by cold. As he had recognized the presence of chlorine, he got the idea of introducing some bubbles of chlorine into the glycerin of commerce, and then he obtained little octahedral crystals, very refractive, very hard and crackling between the teeth, but they are deprived of the sweet taste of glycerin, which is the same when they are fused.—*Zeitschrift fur Chemie*, June 17, 1868.

Alcohol from Lichens. M. Stenberg, knowing that the cellulose of lichens is transformed into glucose more readily than that of wood, he has utilized the enormous quantities of Swedish lichens by transforming them into alcohol. He obtained the best results with *Cladonia rangifera*, H., boiling it twelve hours with water containing 12·5 per cent. of SO^3, HO to obtain 66 per cent. of glucose. The glucose has an agreeable taste, but the alcohol possesses a taste of almonds.—*Jour. Prakt. Chem.* and *Jour. de Pharm.*

The use of Glycerin as a Water Bath has been suggested by M. Vogel, (*Neues Repert. Pharm.* 1868) for temperatures above but near 212° Fahr., as it does not emit such disagreeable odor as oils or paraffin; by the admixture of water the points of ebullition may be made to vary.

Point of ebullition of	pure glycerin,	262°	F.
" "	glycerin and water, equal parts,	215·6	"
" "	glycerin 150, water 100 parts,	223	"
" "	glycerin 175, water 100 parts,	228	"

—*Jour. de Pharm., Oct.* 1868.

Preparation and Properties of Tar Water. M. J. Lefort, read to the Academie de Médecine on June 9th, 1868, an elaborate paper on tar water, now so much in vogue in Paris as a therapeutic agent. The following conclusions were arrived at:

1st. Norway tar and that of France yield to water equal quantities of soluble matter.

2d. That medicinal tar water may be prepared with either exotic or indigenous tar.

3d. The semifluid tar is preferable to that that is thicker for the preparations of which this substance is the base.

4th. That tar water prepared hot, in close vessels, represents better the natural principles of tar, and is more constant in its composition than when made cold and followed by long maceration in contact with air.

5th. That tar water made with heat contains a mean of about 2 parts in 1000 of fixed and volatile principles.

6th. That tar water contains principally pyrogenous oil of turpentine, creasote, volatile resinoid principles, one or more isomeric acids natural to turpentine, and lastly acetic and oxyphenic acids.

7th. That tar water dissolves from 5½ to 7 grains of iodine to the pint, and that the resulting liquid retains its physical properties containing iodized phenic and oxyphenic acids.

8th. That iodized tar water gives no indications to reagents of the characters belonging to free iodine or the iodides.—*Jour. de Pharm., Sept.*, 1868.

Iodide of cadmium and potassium as a reagent for alkaloids.—M. Marmé proposes this double iodide to precipitate the following alkaloids in a very dilute solution in the presence of sulphuric acid: nicotina, conia, piperina, morphia, codeia, thebaina, narcotina, narceia, quinia, quinidia, cinchonia, strychnia, brucia, veratria, berberia, atropia, hyoscyamia, aconitia, delphinia,

emetia, curarin and cytisin. These precipitates are flocculent and white, but become for the most part crystalline. Quinia and strychnia, diluted with 10,000 parts of water, are entirely precipitated. The precipitates are insoluble in ether, soluble in alcohol, slightly soluble in water, but soluble in an excess of the precipitant. These compounds abandon their alkaloids by agitation with a suitable solvent in the presence of an alkali, and are clearly analogous to the alkaline iodomercurates and iodobismuthates. Iodide of cadmium and potassium does not precipitate the glucosides amygdalin, salicin, saponin, cyclamin, ononin, digitalin, phloridzin, &c.—*Bull. de la Soc. Chimique et de Journ. de Pharm., Sept.*, 1868.

GLEANINGS FROM THE GERMAN JOURNALS.

By John M. Maisch.

Dichloro-acetic acid as a cauterizer.—Dr. F. A. Urner has made a number of interesting experiments with this chemical, and arrived at the following conclusions:

The acid is one of the most powerful cauterizers, not inferior in intensity to fumigating nitric acid. It is well adapted for small and large surfaces, may be applied concentrated or diluted, and acts uniformly in depth only upon those places upon which it is applied. It does not produce a strong inflammation upon the surrounding parts, and is accompanied with less pain than other cauterizers, stronger as well as weaker ones. The scab formed is not heavy, it is soon thrown off and small granulations are found underneath. The scars are rather smooth and subsequently not much contracted. In no case were symptoms of toxication observed. Very small quantities are sufficient for one successful cauterization.

The author applies the acid upon small surfaces and deep ulcerations with a glass rod, allowing the adhering drop to fall off previous to the application; larger surfaces are conveniently touched with a glass or asbestos brush. *Buchner's N. Repert.*, 1868, 513–534.

Chloroform.—Chr. Rump, of Hanover, has made a series of experiments, and arrived at the result that pure chloroform ex-

posed to sunlight undergoes decomposition; chlorine is evolved and soon hydrochloric acid is formed; diffused daylight has apparently no influence, but it is better to keep it in the dark. The best means of preservation is an addition of half to one per cent. of absolute alcohol; such a chloroform remains comparatively unaffected by direct sunlight. Commercial chloroform has had this addition for many years, and no bad effects have been observed in consequence thereof.* For medicinal chloroform the specific gravity of 1·480—1·485 is recommended.

The expansion of pure chloroform, according to the author's experiments, is about ·002 for every degree centesimal; we give from his table the spec. gravity at the following temperatures only: 0° C. 1.525, 5° C. 1·518, 10° C. 1·510, 15½° C. 1·500, 20° C. 1·491, 25° C. 1·481. *Ibid.* 545–558.

Cypripedium among Senega has been observed for several years, by Dr. F. A. Flückiger, and was recognized as such by A. E. Ebert, of Chicago. Dr. F. describes the anatomical structure of the adulteration, which agrees with specimens of the rhizome and roots obtained by him from Professor Procter. *Ibid.* 565–569, from *Schweiz. Wochenschr. f. Pharm.*

Nitrite of potassa in saltpeter.—Prof. Boettger states that nearly all commercial saltpeter contains notable quantities of nitrite of potassa, originating undoubtedly from the nitrate of soda, which contains considerable nitrite. Saltpeter is now usually prepared by decomposing this salt with chloride of potassium, and the nitrite remains mixed with it in consequence of insufficient recrystallization. *Ibid.* 570.

New test for nitrates and chlorates proposed by Dr. Braun.—Professor Boettger puts into a porcelain capusule 1 C. C. pure concentrated sulphuric acid, then drop by drop ½ C. C. solution of sulphate of anilina, then the substance to be tested; the whole is slowly stirred with a glass rod. The presence of minute quantities of a nitrate will produce zones of a beautiful red color, caused by the formation of fuchsina. A chlorate will

* It will be observed that Mr. Rump's results are identical with mine, obtained since 1865, and an account of which is found in this journal, 1867, p. 73 and 1868, p. 289.—J. M. M.

produce a splendid blue color. Nitrous acid and nitrites cause the same coloration as nitric acid. *Ibid.* 570–571.

An improved apparatus for the sublimation of benzoic acid has been constructed by C. Rump. It consists of a circular kettle made of sheet iron, 18 inches in diameter, 12 inches high, which is placed upon a good stove and has a cover, through the centre of which a thermometer can be inserted. At two opposite sides the kettle connects with a 6 inch tube 6 inches in length, and these are inserted into tubes 3 inches long, fastened into the paper boxes 44 inches in length and 27 inches wide, at the extreme end of which a hole of 4 inches diameter is cut into the lid and supplied with a tube one foot long. The benzoin or benzoic acid is put into an iron or earthen ware capsule, which is placed into the sheet-iron kettle. The opening in the cover allows the feeding of the apparatus after sublimation ceases. The cover may be kept heated to prevent condensation of the acid, which sublimes very regularly if the thermometer is kept at a temperature of 200 to 240° C. No luting is required. *Ibid.* 671–674.

Potato fusel oil contains, according to Dr. Hugo Trommsdorff, propylic alcohol; besides this, two alcohols appear to be present in it, boiling respectively below 90° C. and between 101 and 103° C. *Ibid.* 688, 689.

Assay of Opium.—Dr. Schneider proposes for the sixth edition of the Austrian Pharmacopœia the following assays:

1. 10 grammes dried and powdered opium are exhausted with altogether 150 grm. water, acidulated with 20 grm. muriatic acid, sp. gr. 1·12; the dried residue must not weigh over 4·5 grm. The liquid, after dissolving in it 20 grm. table salt, is set aside, and after 24 hours filtered. The filtrate is precipitated with ammonia, the crystals collected after 24 hours, redissolved in acetic acid and precipitated with ammonia. The precipitate, after washing and drying, must weigh not less than one gramme.

2. 10 grm. dry powdered opium are macerated for 24 hours with 50 grm. water, and exhausted by percolation in a funnel with 100 grm. more water. The liquid is boiled for 10 minutes with 10 grm. lime, filtered and the residue washed with a little

water; the filtrate is acidulated with muriatic acid, evaporated to 20 grm., filtered, washed, precipitated with ammonia and further treated like 1. *Zeitschr. des österr: Apotheker-Ver.*, 1868, 16, p. 351.

Assay of Peruvian bark.—The same author proposes the following method: 20 grm. calisaya or red bark, or 50 grm. pale bark are powdered, mixed with one-fourth the weight of hydrated lime, introduced into 10 parts parts hot 90 per cent. alcohol, the liquid filtered and the residue exhausted with alcohol. The filtrate is acidulated with acetic acid, distilled and evaporated in a water-bath to dryness, the residue dissolved in dilute acetic acid, evaporated to a small bulk, precipitated by hydrate of lime, washed with little water and exhausted by hot alcohol, the solution evaporated and weighed. The quantities stated ought to yield at least $\frac{3}{4}$ grm. for red, $\frac{1}{2}$ grm. each for calisaya and pale bark. *Ibid.*

Estimation of unsaponified fat in soap.—Prof. Bolley suggests for that purpose commercial benzole or petroleum, of both liquids those portions which are obtained by rectification at and below 85° C. Perutz found that 11·3 grm. French olive oil soap, boiled with benzole, yielded·145 grm.= 1·2 per cent. soluble matter, from which ·002 grm. ashes = ·015 soap was obtained; the balance was fat.—8·197 grm. oleic soda soap yielded to petroleum ·012 grm. = ·15 per cent. fat without ashes.—7·314 grm. of the same soap gave with benzole ·02 grm. = ·27 per cent. fat, the ashes amounting to ·001 grm.—6·735 grm. stearin soda soap yielded, with benzole, ·003 grm. = ·05 per cent. fat without ashes. Ibid. N. 17, 382.

Fusing point of fats.—Dr. Th. Wimmel has determined the following:

	Fuses at	Congeals at	Temperature rises to
Beef tallow fresh,	43° C.	33° C.	36–37° C.
" " old,	42·5	34	38
Mutton suet, fresh,	47	36	40–41
" " old,	50·5	39·5	44–45
Hogs lard,	41·5–42	30	32
Butter, fresh,	31–31·5	19–20	19·5–20·5
" old,	32·5	24	25·5

Japan wax,	52·5–54·5	40·5–41	45·5–46
Cacao-butter,	33·5–34	20·5	27–29·5
Cocoanut oil,	24·5	20–20·5	22–23
Palm oil, fresh, soft,	30	21	21·5
" " " harder,	36	24	25
" " old,	42	38	39·5
Nutmeg butter,	43·5–44	33	41·5–42
Bees-wax, yellow,	62–62·5	congeal just below the fusing point without rise of temperature.	
" " white,	63–63·5		
Spermaceti,	44–44·25		

If fats are heated until they become thin liquid, and before they have become entirely clear, they will congeal near the fusing point without elevation of temperature. Ibid. N. 18, 401, 402, from Poggendorff's Annalen.

Peruvian gum is used in Germany for thickening and fixing colors upon cotton goods and wall papers. It consists of the powder of the "peruvian root," collected in Peru from an unknown plant; the roots are 1 to 2 inches long, of the thickness of a quill and over, very hard, reddish brown externally, internally yellowish white with a yellow centre, inodorous and of an insipid, afterwards bitterish, taste; alcohol dissolves some yellow coloring matter. The powder swells with 15 to 17 parts of cold water to a stiff paste of the consistence of honey, which is free from starch and sugar; mixed with much water, a sediment occurs amounting to 8 or 10 per cent. and entirely insoluble in boiling water. Its solubility in dilute acids and caustic potassa and its swelling with water prove the Peruvian gum to consist mostly of bassorin. Its thickening property is six times greater than Senegal gum, which, according to Liebe, possesses, however, greater adhesiveness. *Ibid.* N. 20, 460, 461, from *Deutsche Industrie Zeitz.*

ADDITIONAL NOTE ON AMERICAN OPIUM FROM VERMONT.

By William Procter, Jr.

In the last number of this Journal (Nov., 1868, p. 513) the writer made known what information he could gather of this so-

called "American opium," presented to his notice by Mr. Wilson, of Monkton, Vermont, the manufacturer of it; and he also gave the result of an assay of the specimen of opium placed in his hands by Mr. Wilson, as representing the new product. Since then some further information has been received, several other samples of the "opium" obtained and assayed, and a further conversation had with Mr. Wilson, which has caused the writer to change his opinion of the value of this "American opium," which he formed from the first sample assayed.

Inquiries instituted by a friend in New York State, as to the reality of this opium culture, left no doubt that Mr. Wilson had been engaged for four or five years in promoting the culture of the poppy, with a view to making "opium," and that not possessing land of his own, the poppies were raised in plots, here and there, by farmers in his neighborhood, who were remunerated by a portion of the opium, which Mr. Wilson manufactured at the proper season. It appears that, at the request of a gentleman who had aided him with money, the manufacturer of the "opium" brought to Philadelphia six pounds and delivered it to Messrs. Rosengarten & Sons, who were desired to extract the morphia from it. Being interested in the matter as an American enterprise, they made three separate assays of a lump of the "opium," and were disappointed in obtaining satisfactory results, which, in view of my published assay, caused them much disappointment. Having taken the precaution to preserve all the results of my assay, it required but little time to satisfy Messrs. R. & Sons of its correctness; and at their request I took samples from two separate lumps of the lot of "opium" in their possession, which they sent to me. These lumps were covered with tin-foil; one weighed more than a pound, and the other perhaps half as much. The interior consistence seemed rather softer than the sample before noticed, the exterior being a little firmer. The extract-like appearance was the same, but the odor varied somewhat, being less decidedly that of Turkey opium than was the first sample.

The assays were made with great care, precisely as that published in November. To distinguish the samples I shall letter them, calling that of the original assay A, those from Messrs.

Rosengarten B and C, and a fourth sample, given to me by Mr. Wilson as of the product of 1867 and inferior in quality, which I shall call D. The latter was an egg-shaped mass, weighing 10¾ ounces, was nearly dry, covered with poppy leaves and had a heavy, narcotic odor like stramonium and tobacco mixed, altogether different from the samples of 1868, which showed an evident improvement in appearance, at least in the latter.

To render the subject intelligible to the reader not having the first assay before him, it may be stated that 100 grains of each sample was taken, so as to represent both the interior and exterior of the lump. This was in each instance rubbed with water in a mortar till smoothly suspended and dissolved, allowed to macerate for 36 hours, then filtered and the dregs and filter washed. The filtrate was then boiled for twenty minutes with 100 grains of lime hydrated, filtered hot and lixiviated, the filtrate acidulated with hydrochloric acid and evaporated carefully to about half a fluid-ounce. This was then rendered nearly neutral by the cautious addition of ammonia, filtered to separate coloring matter, and the filtrate and washings treated with a moderate excess of ammonia and allowed to stand 12 hours, when the precipitate, if any, was collected, washed and weighed. This method, given in Attfield's Pharmaceutical Chemistry, is a modification of Mohr's.

Opium assayed.	Per centage of moisture.	Residue insoluble in water.	Percentage of crude morphia.
Sample A.	16	25	6·25
" B.	10	16	0·90
" C.	11	17	0·40
" D.		31	0·00

Now it is difficult to decide what inference should be drawn from these results; either the process of Mr. Wilson is very defective and unreliable, producing extraordinary variations in the strength of the lumps of the same lot and of different lots, or the original sample submitted to the writer was not an honest representative of the article manufactured by him, and was calculated to deceive. In the first interview with Mr. Wilson he

was distinctly understood to say that about one-third of his "opium" was the juice of the capsule by incision, and that the balance was an extract obtained from the whole plant by moistening it with alcohol, and expressing and evaporating the juice. In the last interview he informed me that *his process required only one-eighth of inspissated juice*, and he seemed under the impression that he had told me that at first. Assuming that the first sample did contain *one-third* of the juice of capsules, then, as one-eighth is nearly one-third of a third, there should have been over two per cent. of morphia in the samples examined last, whereas the strongest of them had less than one per cent. As we have reason to think that Mr. Wilson expected as good a report of the "opium" submitted to Messrs. Rosengarten & Sons as that first assayed by the writer, the inference we are compelled to draw is that his process is unreliable and his product far too variable to be used as opium, and consequently we must caution our readers not to be unduly influenced by our notice of the opium published in November last, and which at the time we believed was the average product of Mr. Wilson's process.

Notwithstanding this discouraging result, the writer believes that it is quite possible to produce opium of the proper strength by attending to the necessary conditions. These are the culture of vigorous poppy plants, and the extraction of the natural milky juice of the capsules, by carefully wounding the exterior layers by one or more transverse incisions extending around the capsule, so as not to penetrate the interior. The proper consistence may be given partially by evaporation and partially by the incorporation of the ground capsules without the seeds, or with extract of the plant, as prepared by Mr. Wilson. I would prefer the former,—using only enough of it to give the natural juice of the capsules a commercial consistence. All who undertake this business should recollect that opium owes its value to its percentage of morphia, and that no amount of manipulation will make morphia out of extract of poppy leaves. Honesty is the best and only policy for American opium growers, and if it won't pay to make it right they had better employ their labor, time and capital in some other branch of industry.

GLEANINGS FROM AMERICAN JOURNALS.

By the Editor.

Tonka Bean in Hooping Cough.—Dr. John Cooper, of Phila., in a letter to the editor of the *Medical and Surgical Reporter*, (Oct. 3, 1868), states that the Tonka bean has been tried by him in pertussis for the reason that it contained "coumarin, the active principle of clover tops—trifolium melilotis—recommended for that disease." The form used was the fluid-extract in 5 to 8 drop doses for a child 5 years of age. He found it to relieve the paroxysms and enable the child to sleep at night. His trials extend to five cases, in all of which the action of the drug was sufficiently marked to warrant recommending it to the notice of physicians for therapeutic use, he being "convinced that we have in it a means of saving many lives, besides giving great relief to all who suffer from the disease."

It would be well to try coumarin itself to ascertain if *it* is the curative agent in the tonka bean.

The Hot Springs of Arkansas.—There are fifty-four of these springs in all, having a mean temperature of 134° Fahr., and ranging from 63° to 150° Fahr. They discharge altogether 317 gallons of water per minute. The springs are situated on the western slope of Hot Spring Mountain, (which is a margin of the Ozark Mountains) at an elevation of 360 feet above the level of the sea, and about 55 miles west of Little Rock.

Various analyses have been made of them under the direction of the State Geologist, determining the presence of lime, magnesia, alumina, oxide of iron, carbonate of soda and potash, sulphate of magnesia, oxide of manganese, sulphate of lime and traces of bromine and iodine. The waters enjoy great celebrity for their usefulness in cases of rheumatism and gout, and contain a large excess of free carbonic acid, which aids in the solution of some of the earthy salts.

Preparation of Sponge Tent.—Dr. George Syng Bryant, of Lexington, Kentucky, (*Amer. Jour. Med. Sci.*, Oct., 1868,) describes several methods of making sponge tent. The old way was by saturating the sponge with warm melted wax and compressing it until the wax solidified, and then cutting it into suita-

ble shape. The method of Dr. Simpson, of Edinburgh, is to saturate sponge, previously cleansed, with thick gum mucilage, and then having pushed an awl through its centre, a cord is forcibly wrapped around it so as to expel most of the mucilage and reduce the size of the sponge to a small diameter, and dried, when the cord is removed and the exterior of the tent rubbed down with sand paper to the proper shape.

Dr. H. Nott, of New York, prepares an antiseptic sponge tent by saturating the prepared sponge with an antiseptic paste composed of alum, acetate of lead, wheat-flour and gum-water heated to the boiling point, and wraps it with gold-beaters skin. It is then punctured with a small knife blade.

Dr. Bryant recommends that 10 or 12 grains of carbolic acid be dissolved in an ounce of mucilage before using it for the tent, which renders it antiseptic. In preparing the tent, moderately coarse elastic sponge should be selected. Cleanse it well, and while wet cut it into the exact shape and size that is needed to assume after expanding. Then saturate it with the mucilage and wrap it on an awl, which should be pushed through the axis of the conical piece of sponge with strong coarse, well-twisted cord, commencing at the point and carrying the cord around regularly so as to form a close spiral coil. When dry and the cord is removed the surface of the sponge contains a spiral thread which tends to retain the tent in position.

Catalpa Bark.—Dr. Joseph Jones, (*St. Louis Medical Reporter*, Oct. 15, 1868,) calls attention to this bark, about which but little appears to be known, though it has been recommended as an anti-periodic. He thinks caution should be used in its employment, from its generally believed poisonous nature. When the bark is wounded a rank odor is exhaled, and the flowers are said to yield a poisonous honey. The seeds are said to be useful in asthma, taken in decoction.

The alleged poisonous qualities of this plant deserve investigation; we doubt its activity, as the very great abundance of the tree in many localities would have caused some accident if it possessed deleterious properties.

India the great nursery of Cholera.—Dr. John C. Peters, in

an interesting article commencing the September number of the *Chicago Medical Examiner*, gives an account of the geographical progress of cholera in times past from Central India to the rest of the world. He considers the city of Hurdwar, situated at the point where the Ganges issues from the Himalaya region, famous as the point where the largest Hindoo fairs and festivals are held annually at the vernal equinox, as the source of this terrible epidemic. The usual number of pilgrims and merchants is from 200,000 to 300,000 annually, but every twelfth year, which is particularly holy, the number is increased to 1,500,000 to 3,000,000 of devotees and traders, crowded together. This vast concourse, composed of persons from Arabia, Persia, Beloochistan, Afghanistan, Cabul Tartary, Central Asia, and Russia, produce such unfavorable hygienic conditions, that but a few days time is needed to induce an epidemic. In 1783, 20,000 pilgrims died in eight days, and after several similar catastrophes a very disastrous outbreak of cholera occurred in Hurdwar, in 1867, where 3,000,000 Hindoos assembled. From this point the track of the cholera is traced in the lines of the great caravans going south-west, west, and north-west. The Delta of the Ganges is also marked as a cholera centre. From these initial points the epidemic extends to Bombay, Mecca, Alexandria, Bokhara, Astracan, Constantinople, etc. Dr. Peters has described the courses and the causes, the latter due to the accumulation of filth and dead animals, resulting from the vast ill-provided crowd stopping at a place without any precautions being taken to prevent infection. Graphic descriptions are given of the pilgrimages by caravans for religious and commercial purposes, and the incidents and accidents of caravan life.

Belladonna as an anti-galactic.—Dr. D. W. Storment, of Topeka, Kansas, says that a solution of two drachms of extract of belladonna in a fluidounce of water applied over the breast with a brush will stop the secretion of milk, and that its application to one breast will suspend its secretory action without affecting the other, and hence recommends it in mammary abcess.—*Medical Record*, Oct. 1, N. York.

Fluid extract of Frostwort. Prof. Hubert Primm, Ph. D., of

the St. Louis College of Pharmacy, offers a formula for making this fluid extract. It differs in manipulation from that published by the writer in the Proceedings of the Association for 1863, page 236, which is identical with the officinal process for fluid extract of dulcamara. Prof. Primm's process is as follows:

Take of	Frostwort leaves, . . .	16 troy oz.
	Alcohol, . . .	16 fluid oz.
	Water, a sufficient quantity.	
	Sugar, . . .	8 troy oz.

Reduce the frostwort to a coarse powder and macerate it in a covered vessel for eight hours with 12 fluidounces of the alcohol. Transfer to a suitable apparatus for displacement, and when the liquid has ceased to flow mix the balance of the alcohol with 4 fluidounces of water and gradually add them to the mass in the percolator until the liquid displaced measures 12 fluidounces, which liquid should, by aid of a water bath, be reduced to *four* fluidounces.

The marc remaining in the percolator should then be treated with one pint of cold water by maceration for twelve hours, and subjected to strong pressure until a pint of liquid is obtained, which should be evaporated to eight fluidounces, mixed with the four fluidounces previously obtained, and the sugar dissolved in the mixture by agitation.—*Humboldt. Med. Arch., Sept.* 1868.

Camphor a preventive of oxidation. Mr. George Wellborn, according to the *Journal of Applied Chemistry*, finds that a small lump of camphor placed in a bottle of recently crystallized protosulphate of iron preserves it from oxidation, the salt affording a transparent solution after it had been kept three months. If the odor of camphor acquired by the salt is objectionable, it may be exposed awhile before using, or it may be removed by alcoholic washing and dried.

Quinine Pills. Dr. Louis E. Atkinson (*Med. and Surg. Reporter*, Sept. 19, 1868,) recommends *tartaric acid* as a means of making quinine pills, by the following process, viz.:

Take of	Sulphate of quinia, ...	20 grains.
	Tartaric acid, ...	4 "
	Water, ...	1 minim.

Triturate the quinia and acid, then add the water, which will form a mass, to be divided as desired. If the acid is dry, the proportion of water is correct; if moist, it is too much. The advantages proposed by Dr. Atkinson are, first, tenacity of the mass easily worked; second, it does not readily lose its pillular consistence, like that made with elixir of vitriol, and may be manipulated without haste. Third, its bulk is not greater than by Parrish's formula, and lastly, no specific skill is needed in its preparation. For another quinia pill mass, see Mr. Creecy's formula, at page 7 of this number.

Haofash, a new styptic. The Paris *Moniteur* gives an account of a tree called "haofash," which grows wild in the mountains of Baria, in Cochin China, in the forests, hidden among lianas and other creepers, which render the woods almost impenetrable. The knowledge of its virtues is confined to the bonzes and physicians who keep it secret. M. M. Condamine and Blanchard, two French travellers, have succeeded, partially by gold, in eliciting the information from a bonze, and give the following account: "The Annanites, who gain their livelihood by selling the bark of the haofash to professional men, wait till the tree has attained its third year before stripping it of its bark, its usual height at that age being about 24 feet, with a circumference of about 18 inches. The operation is performed in June, when the tree has neither blossoms nor fruit; it is hewn down and then denuded of its bark methodically, in slices about two feet long and three or four inches broad. These strips are made into bundles weighing from 30 to 40 pounds."

The bark has an ash-grey color, externally, and brown within; has a strong aromatic bitter taste, and when chewed reddens the saliva. It is a powerful styptic, and is used in cholic, diarrhœa and dysentery. It is prepared for use by decocting from 90 grains to 150 grains in 3 fluidounces of water, reduced to one-fifth by evaporation, for a dose.—*New York Med. Record*, Nov. 2.

Iodine and iron alum water. The following analysis of a recently discovered spring in Virginia is published in the *Medical and Surgical Reporter* of Dec. 5, 1868, signed by Prof. William

E. A. Aiken, M. D., LL. D., of the University of Maryland, viz.:

SOLID CONTENTS OF A GALLON OF WATER, 105·140 GRAINS.

Sulphate of lime,	6·220 grains.
Sulphate of magnesia,	22·250 "
Sulphate of iron,	30·465 "
Sulphate of alumina,	1·580 "
Sulphate of potassa,	·216 "
Sulphate of soda,	3·022 "
Chloride of sodium,	·874 "
Iodide of sodium,	·850 "
Crenate of iron,	·820 "
Crenate of ammonia,	·641 "
Phosphate of iron,	·302 "
Free sulphuric acid,	28·376 "
Free carbonic acid,	3·500 "
Organic vegetable matter,	·703 "
grains,	99·819

Arsenical spring water in New Jersey. According to the Journal of Applied Chemistry for Dec., page 192, Prof. Doremus has given the following analysis of a spring water existing near Pompton, Passaic County, New Jersey. This is said to be the first arsenical spring yet discovered in this country, and there is only one in Europe. An imperial gallon of 70,000 grains affords:

Bi-carbonate of soda,	44·05 grains.
Arsenicum,	3·10 "
Potash,	10.00 "
Magnesia,	60.00 "
Iron,	15·00 "
Lime,	50·00 "
Sulphate of lime,	23·10 "
Silica,	8·00 "
Bismuth,	a trace.
Total,	213·25

ON VALERIANIC ACID.

By Frederick C. Musgiller of Brooklyn, N. Y.

Query 24.—The U. S. Pharmacopœia defines valerianic acid as having a sp. gr. 0·933. Is this sufficiently accurate for practical purposes? and if not, what standard should be adopted?

The acid of the Pharmacopœia is the monohydrated, or that containing 1 eq. water. Wittstein makes the specific gravity of this acid 0·967, Fowne's 0·937 and Delffs' 0·935. The last mentioned specific gravity was readily obtained by the writer, and was found to answer all the officinal purposes for which it is required, namely, the preparation of valerianate of ammonia, and valerianate of quinia. There is probably some error in the officinal process. The Pharmacopœia, in the preparation of the acid, rejects the distillate so long as it has a specific gravity above 0·940. But it is found by actual experiment that the specific gravity of the acid can never be reduced to 0·933 so long as that of 0·940 is retained, and the writer, in a series of carefully conducted experiments, never succeeded in getting the acid lighter than 0·935 by the officinal process and with ordinary sulphuric acid. He would therefore suggest that, at the next revision of the U. S. Pharmacopœia, the s. g. 0·935 be adopted as the standard, and would also suggest some slight modifications in the details of the officinal process. That successfully followed by the writer is as follows:

Acidum valerianicum—Valerianic Acid.

Take of valerianate of soda in coarse powder, eight troyounces.
Sulphuric acid,
Distilled water, each a sufficient quantity.

To the valerianate of soda add, first, three fluidounces of distilled water, and then three troyounces and a half of sulphuric acid. Mix them thoroughly, and from the mixture, after standing, separate the lighter oily liquid. Pour this into a tall narrow glass vessel and drop sulphuric acid into it without agitation until its specific gravity is reduced to 0·945. Separate the lighter liquid from the sulphuric acid, introduce into a retort, and distill nearly to dryness, rejecting all the distillate which comes over before the temperature in the retort has reached 342°. The rejected por-

tion of the distillate, after being treated with sulphuric acid in the same manner as the first, may be returned to the retort after the first is all distilled off, and the distillation repeated as before. In using the sulphuric acid for dehydration, it is best to have the valerianic acid in a tall narrow glass cylinder or hydrometer jar, then add the sulphuric acid gradually drop by drop, so long as it does not dissolve in the valerianic acid, care being taken *not* to shake or agitate the vessel during the process. The sulphuric acid, as it drops into the valerianic acid, breaks into little globules and falls like fine rain or mist to the bottom. A point is, however, reached when the two acids unite, and this is the limit. After standing a few moments, much of the partially dehydrated acid can be poured off into the retort for distillation, and the remainder may be separated by means of a separating funnel. In manipulating with varying proportions of sulphuric acid for the dehydration, the best proportions appeared to be about 360 grains of the officinal sulphuric acid, and this was applied to about 6½ fluidounces of the valerianic acid (s. g. 0·958) to be dehydrated, or the average quantity obtained by the officinal formula. The writer, however, found it more convenient to use four times the quantity of the officinal formula, and upon such proportions are his general results based. In the last experiment made with four times the officinal quantity, great care was taken to observe the boiling point of the acid, and its specific gravity at the various temperatures during the distillation; each fluidounce, as it dropped from the condenser, was set aside, the specific gravity taken and the temperature at which it came over noted. From the table given below it will be seen that only three fluidounces out of twenty-four were obtained of a s. g. 0·933, ten fluidounces had a s. g. 0·9355, which, when mixed with the three fluidounces of s. g. 0·933, made thirteen fluidounces of s. g. 0·935. The first nine fluidounces that came over were set aside, again treated with sulphuric acid until its specific gravity was reduced to 0·945, returned to the retort, redistilled, and by still another fractional treatment with sulphuric acid and distillation six fluidounces more of valerianic acid of the s. g. 0·935 were obtained from it, making nineteen fluidounces in all, or a loss of five fluidounces in the process. The

writer submits herewith three specimens of valerianate of ammonia, prepared from acids of different degrees of density, as marked on the labels, including a specimen prepared from acid of s. g. 0·933. A careful comparison of them appears to confirm the experience obtained in these investigations and in previous practice on a large scale, indicating that for the only officinal use to which the acid is applied a higher specific gravity answers equally well and saves much acid, time and labor.

In conclusion the writer presents a table showing the specific gravity of the acid as obtained at different temperatures.

Successive fluidounces as distilled.	Boiling Point.	Specific gravity.	Successive fluidounces as distilled.	Boiling Point.	Specific gravity.
1.	*280° to 328°	0·959	12.	344° to 345°	0·936
2.	328° " 330°	0·952	13.	345°	0·936
3.	330° " 333°	0·948	14.	345° " 346°	0·935
4.	333° " 344°	0·947	15.	346°	0·934
5.	334° " 337°	0·944	16.	346° " 347°	0·934
6.	337° " 339°	0·943	17.	347° " 348°	0·934
7.	339° " 340°	0·941	18.	348°	0·934
8.	340° " 342°	0·940	19.	348° " 350°	0·934
9.	342° " 343°	0·938	20.	350° " 351°	0·933
10.	343° " 344°	0·937	21.	351° " 352°	0·933
11.	344°	0·937	22.	352° " 354°	0·933

* The distillation below 300° takes place without boiling.

The query is therefore answered by an opinion that the specific gravity prescribed by the Pharmacopœia for its valerianic acid cannot be obtained by its process, and is lower than necessary; and that 0·935 would be far more practical and economical, and the results equally good.

BROOKLYN, Sept., 1868.

—*Proc. Amer. Pharm. Assoc.*, 1868.

ON GELSEMINIA.

By C. L. EBERLE.

QUERY 11th.—Is the so-called "gelseminia" a neutral or alkaloid principle? Does it exist in the leaves and in the wood of the root, or only in the bark? And does it represent the activity of the plant?

The root of Gelsemium sempervirens has for a considerable time been employed in the medical practice of portions of our country as a nervous and arterial sedative—in large doses occasioning dizziness, dimness of vision, dilated pupil and uni-

versal prostration, reducing the force and frequency of the pulse and the frequency of respiration, and producing insensibility to pain, but without stupor or delirium.

It is, therefore, exceedingly potent, and I am cognizant of at least two cases of poisoning by its unintentional use—one resulting in the death of the individual, the other recovering only upon the prompt administration of an antidote.

During the past twenty years various writers have commented upon its uses and effects in the different medical journals of the day.

So far as I can learn no published account of the existence of an alkaloid, covering the active principle of Gelsemium sempervirens exists, if I may except a reference to its appearance by Mr. Henry Kollock, Amer. Journ. Pharm. xxvi, 203, which was not elaborated. Yet I have received *private* statements of its presence and production, and have been privileged to examine an impure sample of the so-called "gelseminia," prepared by Prof. Maisch, which gave decided alkaline reaction with appropriate tests.

This gelseminia was produced by the following process:

An alcoholic tincture was evaporated to small bulk, diluted with water to precipitate resin, filtered, precipitated with tannic acid, treated with hydrated oxide of lead, exhausted by alcohol and evaporated; before dryness ether was added, and upon spontaneous evaporation greenish red crystals mixed with resinous matter resulted.

With a view to properly determine this query, early arrangements were made to procure from Albany, State of Georgia, through Messrs. Welsh, a supply of Gelsemium sempervirens, which, being collected at the proper period, arrived during the spring of the present year. Upon examination the sack forwarded contained portions of the entire plant, the gross weight of which was six av. pounds, 13 ozs. being roots, 13½ ozs. leaves, the remainder vines, and were shipped in this form in consequence of a misunderstanding, my purpose requiring but the roots and leaves.

The roots being prepared for percolation, were exhausted with strong alcohol, the tincture evaporated to the measure of a few

fluidounces (3), water added carefully to precipitate a portion of the resin. A green fixed oil removed from the surface of the liquid with bibulous paper by absorption, filtered, a solution of tannic acid added until a precipitate was no longer produced; the mixture allowed to settle, poured from the precipitate, filtered; the filters preserved and dried, cut into small pieces, and with the precipitate aforementioned dried, powdered and digested with hydrated sesquioxide of iron. This was dried, exhausted by ether, and the etherial solution evaporated spontaneously.

The result to the naked eye exhibited an amorphous mass, but with a glass of ordinary power revealed groupings of acicular crystals, insoluble in water, and whose solution in acid by the aid of heat was not affected by either iodohydrargyrate of potassium or phosphomolybdic acid.

On the platinum foil heated to redness no trace of a stain was shown.

Placed upon the tongue in minute quantity a slight bitterness was manifested, and, after an interval, followed by a decided acrimony, extending to the throat, remaining for several hours; this acrimony, however, is probably due to the presence of a slight quantity of a principle resulting from the next experiment. The solution in ether having failed to develope an alkaline principle, strong alcohol was poured through the mass just treated with ether, the same being freed from its traces.

Upon evaporation, groups of crystals formed, a portion of which I here exhibit. There is a slight resinous impurity also present, but not sufficient in amount to embarass the complete exhibition of the crystalline structure. The solution is simply opalescent by reflected light.

This result gives the characteristic reaction with Mayer's test as well as phosphomolybdic acid, and restores the blue color of litmus paper, which has been slightly reddened by fumes of hydrochloric acid.

Heated on platinum foil to redness it inflames and is dissipated with scarcely a trace of stain.

One-eighth of a grain troy administered to a young cat produced the symptomatic effects ascribed to an over-dose of the drug, accompanied by much frothing at the mouth, and result-

ing in its death. An equal amount of the neutral product similarly administered to a kitten caused no manifest inconvenience. It is therefore to be presumed the principle soluble in alcohol, and which is also dissolved by diluted alcohol and hot water, is the representative principle of the drug, and which, if isolated in quantity, would prove to be its equal in therapeutic power.

I am pleased to be able to state that arrangements are being made to experiment with a large quantity of the bark of the root by one of our most competent associates; and the Association may hope to have a full account of the therapeutic action of this alkaloid at a future meeting—probably the next.

The wood of the root can be safely asserted, from careful experiment, to contain none of the alkaloid.

The full amount of leaves in my possession (13½ ozs.) were powdered and percolated by strong alcohol to exhaustion, concentrated, strongly acidulated by acetic acid, allowed to rest for a day, filtered and evaporated to a syrupy consistence by gentle heat. To this, alcohol containing one-tenth part of sulphuric acid was added, and digested.

This was neutralized by lime in slight excess, concentrated and allowed to rest, diluted with water and filtered; the precipitate was washed with diluted alcohol, and the liquid decolorized with animal charcoal, filtered and evaporated by water bath to dryness. The residue powdered, exhausted by alcohol with animal charcoal, filtered and evaporated spontaneously. This manipulation should exhibit the presence of the alkaloid in the leaf, should any exist. I have not entirely finished my examination of it, but will communicate to Prof. Maisch the result of the investigation.—*Proc. Amer. Pharm. Assoc.*, 1868.

ON THE REMOVAL OF ODOROUS COMPOUNDS FROM ALCOHOL BY PERMANGANATES.

By Geo. F. H. Markoe, of Boston.

Query 22.—What are the practical reactions between the permanganates and alcohol of various strengths and degrees of cleanness; and how far can such reactions be made available for producing deodorized alcohol, cologne spirit, or clean alcohol, upon a small scale, with special reference to the alcohol recovered from fluid extracts, and other Galenical preparations?

It is a well known fact that the permanganates are among the most powerful oxidizing agents at the command of the chemist; and the ease with which they furnish nascent oxygen when merely placed in contact with organic matter, has led to their extensive employment as disinfectants and deodorants. The power they possess of destroying disagreeable odors suggested their employment in the purification of alcohol, and some years ago a patent was granted to Mr. Atwood for a process in which permanganate of potassa was the agent used in producing a deodorized or cologne spirit, which is well known to pharmacists as Atwood's alcohol. The article used by Atwood as a purifier is not the true permanganate of potassa (KO,Mn_2O_7), but the so-called commercial permanganate of potassa, which is in reality manganate of potassa (KO,MnO_3), a much less effective oxidizing agent than the permanganate of potassa.

In the following experiments, the writer, in every instance but one, used the officinal permanganate of potassa; and the materials worked upon were unclean alcohols of various strengths, obtained in concentrating the percolates in the preparation of some fluid extracts and syrups. Many more experiments were performed than those detailed in this paper, but it is deemed sufficient to give the results of nine experiments, together with samples of the products. One of Neynaber's Pharmaceutical Steam Stills, of one gallon capacity, was employed for the distillations, and five pints of unclean alcohol were used in each rectification, with 100 grs. of permanganate of potassa.

Exp. 1.—Five pints of alcohol were obtained in following the officinal process for the preparation of comp. syrup of sarsaparilla. By the accidental passage of a small part of the contents of the still during the last part of the distillation, the distillate was rendered quite unclean and tinged with a brown color; it contained 70 per cent. of alcohol, and was strongly contaminated with the mingled odors of Rio Negro sarsaparilla, guaiacum wood, rose, Alexandria senna and licorice root.

Exp. 2.—The five pints of impure alcohol obtained in Exp. 1 were re-distilled with 100 grs. of permanganate of potassa; the distillation was stopped when four and one-half pints of distillate had collected in the receiver. This distillate contained 84 per

cent. of alcohol, was clear, colorless, and possessed a faint odor of the sarsaparilla compound. It certainly was clean enough to be used in many Galenical preparations. The writer has often seen poorer samples of alcohol in the market.

Exp. 3.—Five pints of impure alcohol were obtained, half from fl. ext. senna, half from fl. ext. senega. The mixture contained 85 per cent. (Tralles) of alcohol; had a very decided odor of senna.

Exp. 4.—The above mixture was re-distilled with 100 grs. of permanganate of potassa previously dissolved in f℥i of water. The distillation was stopped when four and three-fourths pints of distillate were obtained; this was clear, colorless, contained 84 per cent. of alcohol, and was to a very great extent deprived of the odor of senna; more clean than No. 2.

Exp. 5.—Five pints of unclean alcohol of 67 per cent. proof, from fl. ext. scullcap; odor strong of scullcap.

Exp. 6.—No. 5, with 100 grs. of permanganate of potassa, was re-distilled, and distillation stopped when four pints of distillate had been obtained. This was clear, bright, 77 per cent. alcohol, and much improved by the treatment with permanganate.

Exp. 7.—Five pints of alcohol from fl. ext. wild cherry, with 100 grs. permanganate of potassa. Product very clean.

Exp. 8.—Four fluid-ounces of tinct. of buchu were treated with 200 grs. of permanganate of potassa, dissolved in water and filtered. By this treatment it was in a great measure deprived of odor and also of color, as may be seen by comparing the samples of the tincture before and after the treatment with permanganate.

Exp. 9.—Three pints of impure alcohol recovered from the tincture of buchu used in No. 8 were re-distilled with 500 grs. of manganate of potassa (common permanganate of commerce) and two and one-half pints of distillate obtained. This smelled of the buchu nearly as much as the tincture that was simply treated with permanganate without distillation.

From these experiments the writer concludes that the rectification of unclean alcohol with small quantities of permanganate

of potassa is clearly an advantage, as in nearly every case it partially removes the objectionable odor, and in quite a number of instances gives an alcohol clean enough for very many pharmaceutical purposes. None of the experiments made by the writer gave anything like a fine deodorized alcohol suitable for use in perfumery or for delicate preparations, nor does he think that such an alcohol can be produced on the small scale, with the apparatus at the command of the pharmacist, and our present knowledge of the subject.

The reaction of permanganates with organic matter is due to the decomposition of the permanganic acid (Mn_2O_7), which is resolved into hydrated binoxide of manganese, and oxygen,—$Mn_2O_7 = 2(MnO_2) + 3O$. The oxygen being in a nascent state, instantly combines with the organic matters present and destroys them. In the case of unclean alcohol, the permanganic acid seems first to destroy the odorous principles present, and, if in sufficient excess, to then destroy the alcohol.—*Proc. Amer. Pharm. Assoc.*, 1868.

ON ACIDUM HYDRIODICUM DILUTUM.

By John A. Dunn.

Query 2d.—Is the officinal process for Acidum Hydriodicum the best that can be practically suggested?

The officinal process, when managed with skill, yields a good product, but in practice, besides being very troublesome, it has at least one great objection, and that is the use of sulphuretted hydrogen in its preparation. The dispensing pharmacist does not want to contaminate the atmosphere of his store with this odor if it can be avoided. In order to avoid this, and simplify the process, the writer determined to make some experiments with Buchanan's method, hoping by some slight modification to obtain a good and reliable product, and one that would represent that of the U. S. Pharmacopœia in the proportion of iodine. The chief objection to Buchanan's process, in the original form, is that it invariably deposits crystals of bitartrate of potassa on standing; this the writer believes he has obviated, at least to a practically useful extent, and as the results of his experiments in that direction, offers the following modified process:

Take of Iodide of Potassium 209¾ grs.
Tartaric Acid, in crystals, 190¼ grs.

Dissolve the iodide of potassium in three fluidrachms of distilled water, and the tartaric acid in the same quantity, and filter if necessary; mix the solutions, and set the mixture into ice cold water, allow it to stand for one hour, then filter, and make up the measure to two fluid-ounces.

The formula is based on actual calculation, and each fluidrachm of the solution of the acid represents ten grains of iodine.

Hydriodic acid is readily obtained by the various methods given for its preparation. The greatest difficulty is to preserve it, and it was found impossible to do this without recourse to chemical means. An article on syrupus ferri iodidi, published in the American Journal of Pharmacy for March, 1868, first suggested the use of hyposulphite of soda for this purpose; it was tried, and found to answer very well. Its use in such small quantities is supposed to be unobjectionable, since it can have no influence upon the medicinal application of the acid. A solution is made containing sixty grains of hyposulphite of soda to the fluidounce of distilled water; of this, five drops was found sufficient to restore a two ounce sample of highly-colored acid, and to keep it so to the present time, a space of three months. How much less of this solution would preserve a newly made acid from change in keeping could not be determined for want of time.

This query may, therefore, be answered in the judgment and experience of the writer, that the officinal process is not the best for medicinal uses, though it may be the best for more strictly chemical purposes, and that a slight modification of the process of Dr. Buchanan of Glasgow is better; and further, that the acid may be either protected or restored by the use of one-third of a grain of crystallized hyposulphite of soda, or less, to the fluid-ounce, provided this be considered unobjectionable.

Brooklyn, Sept. 5th, 1868.

—*Proc. Amer. Pharm. Assoc.*, 1868.

ON COMMERCIAL HYDRARGYRUM CUM CRETA

By Joseph P. Remington, of Brooklyn, N. Y.

Query 1st.—What is the quality, proportion of oxide of mercury &c. in Hydrargyrum cum Creta of commerce, selecting samples recently prepared by manufacturers and others from the dispensing bottles of pharmacists?

Mercury with chalk has lately fallen into disfavor with the medical profession, on account of its variable quality as met with in commerce; and it follows as a natural sequence that the preparation must have a variable action on the economy. Many physicians indeed have given up its use entirely, because vomiting and gastric irritation have been produced, rather than its characteristic mild effects; this is attributed to the oxidation of the mercury.

Several processes have been proposed for its preparation, the oldest one being that of simple trituration. Then came a process for trituration with resin; after the mercury was finely divided the resin was dissolved out with alcohol; this process originated with Dr. Stewart, of Baltimore. Then one in which the material used to facilitate the division of the mercury was starch moistened with water; this process was used by Dr. Mettauer, of Virginia; and lastly, the process of succussion or shaking, first suggested by Mr. W. Hewson, of Augusta, Ga.

The processes most used by manufacturers are the simple trituration and the succussion processes. The first is believed to be most in vogue, and is objectionable principally on account of the time required to thoroughly divide the mercury, and the oxidation caused by its prolonged exposure to the atmosphere. The last process has been successfully carried out on the large scale by the aid of a machine contrived for the purpose by Dr. E. R. Squibb.

This machine consists of two frames, each capable of holding securely a bottle of the capacity of one gallon, moved up and down in guides by means of connecting rods and a crank shaft and pulley.

A full description, with a drawing of the machine, may be found in the published Proceedings of this Association for 1859.

Ten pounds of mercury and two pounds of honey are intro-

duced into each bottle, and the mixture shaken for six hours; thirty-one pounds of precipitated chalk is now made into a uniform paste with four and three-quarter gallons of water, and the shaken mercury is added to the mixture of chalk and water and thoroughly stirred; it is now transferred to a muslin strainer, drained, dried and powdered. The advantage possessed by this process is protection from oxidation, the honey, which was originally added to facilitate the division, envelops the globules, protects them as soon as divided, and the small quantity left in the preparation effectually shields the mercury from change, as will be shown by some experiments further on.

For the purpose of testing the quality of the preparations formed in commerce, samples were obtained from all of the known manufacturers in this country, and one sample made by an English manufacturer, from the San Francisco market, which is principally supplied with the English product. The samples were from Powers and Weightman, Rosengarten & Sons, Charles Ellis Son & Co., Charles Pfizer & Co., Herrings & Co., and Dr. E. R. Squibb, and three samples from the dispensing bottles of pharmacists, in Philadelphia and New York. The process of assay adopted was that proposed by Dr. E. R. Squibb, and published in the American Journal of Pharmacy for Sept., 1857.

Ten grammes of the powder was put in a six ounce beaker and 75 c. c. of distilled water added and mixed with the powder; 40 c. c. of pure acetic acid was slowly added at intervals with stirring. Considerable care is necessary to prevent the mixture from frothing over, hence the expedient of first mixing the powder with water; the carbonic acid is liberated more readily and the bubbles of gas, on account of having a thinner film surrounding them, are broken by the stirrer, and the gas set free with much more ease than when the acetic acid is digested alone with the powder, and a dense solution of acetate of lime formed that envelops the escaping bubbles, which are difficult to break, and if not broken the mixture froths over, and the assay is, of course, lost. The mercury was allowed to subside and the supernatant liquid poured on to a small tared filter prepared for it, the mercury being poured on last; the filter was then washed, dried, and weighed. On examining the contents of the filter after being

dried, considerable matter (which was insoluble in acetic acid) was noticed, supposed to be silica; on this account the weight of the contents of the filter would not represent the quantity of metallic mercury in the preparation; the filter was therefore introduced into a tube, closed at one end; the other end of the tube was then drawn out, bent and broken off; it was so adjusted that the orifice just dipped in water contained in a short test-tube. Heat was now applied until globules ceased to come over; the tube was then heated to redness throughout, and if any globules were noticed at the end of the tube after cooling, they were rinsed through with a little alcohol. The distilled mercury was washed with alcohol to free it from empyreumatic products, dried and weighed.

The filtrate was now highly diluted and hydrochloric acid added in slight excess; the sub-chloride formed was collected on a tared filter, dried and weighed. Sulphuretted hydrogen was conducted through the filtrate from this precipitate until it was saturated; the resulting sulphide was collected on a tared filter, washed, dried at 212°, and weighed. The amount of oxides present was now easily calculated from the weight of the precipitates. Each of the samples was tested for sugar by Fehling's method (vide Fres. Quan. Analysis), but one sample contained traces of sugar.

Under the microscope the difference in the mode of preparation of the samples could be very distinctly seen. In the samples made by the trituration process the chalk was observed to be in a much finer state of division, and the globules, especially in the specimens containing most oxide, were observed to be in irregular coalescent masses, with particles of chalk intermixed. Globules were observed in some of the samples coated with a red substance, and on others a black powder was noticed; this would correspond to the red and black oxides. In the mercury and chalk made by the succussion process the globules were spherical, with clean, bright surfaces, the largest of these globules measuring, by the micrometer, $\frac{1}{100}$ of a millimetre; the globules in the preparation made by trituration were somewhat smaller, the largest measuring from $\frac{1}{200}$ to $\frac{1}{300}$ of a millimetre.

The results of the investigations are tabulated below.

SAMPLE.	PERCENTAGE OF Metallic Mercury.	Suboxide of Merc.	Oxide of mercury.	Sugar.
No. 1. From a manufacturer in Phila.	35·91	0·008	0·372	none
No. 2. " " " " "	35·01	0·08	0·465	"
No. 3. " " dispensing bottle in "	17·37	0·08	14·273	"
No. 4. " " manufacturer " "	32·81	0·01	0·265	"
No. 5. " " dispensing bottle " "	12·41	0·11	25·69	"
No. 6. made in England	29·01	0·03	0·50	"
No. 7. " by succussion	36·30	none	A trace, producing brown discoloration on addition of H.S.	a trace
No. 8. From a manufacturer in N. Y.	29.82	0·01	0·838	none
No. 9. " " dispensing bottle in "	30·32	0.05	1·416	"

It will be noticed that two samples obtained from dispensing bottles contained respectively 14·2 per cent. and 25·6 per cent. of oxide of mercury. As the quantity of mercury originally present could not have been more than 37·5 per cent., (the officinal quantity), it will be seen that over one-third of the mercury in one, and nearly two-thirds in the other had been oxidized. The samples obtained from the manufacturers contained, in comparison, but little oxide, and from this it is inferred that the change takes place in the dispensing bottle. An expected sample of Hydrargyrum cum Creta made by Dr. Stewart's process was not received, but the disappointment was rendered lighter by the fact that a sample assayed by Prof. Procter, when it was only eighteen months old, gave 22·8 per cent of oxide. This process, however, is seldom if ever used. Three samples of Hydrargyrum cum Creta made by the succussion process were taken, soon after accepting this query, for the following experiment: In one, the powder was simply wrapped in paper, and the package allowed to lie in an exposed place, with access to the sun's rays, heat, moisture, &c. Another portion was put in a bottle and stopped loosely with a cork stopper, as an ordinary pharmacist would be likely to keep it. A third was put in a bottle and the cork sealed, and the bottle secluded from light. At the expiration of eleven months these three samples were examined chemically, and with the aid of the microscope, and no appreciable difference could be detected; this result is attributed to the protecting influence of the small proportion of honey left in the preparation.

Four samples are presented to the Association for inspection. Sample No. 1 is a very fair specimen made by the trituration process; it contains nearly the full amount of mercury, and but ·008 per cent. of suboxide and ·372 per cent. of oxide, and has about the normal color. Sample No. 2 shows the effect of a very slight proportion of suboxide of mercury on the color; it differs very slightly in composition from the first, but contains ·08 per cent. of suboxide. Sample No. 5 is a very bad specimen; the pinkish tinge is very well marked, as it contains 25·6 per cent. of oxide. Sample No. 7 was made by succussion, and shows the characteristic color of a preparation so made—being much lighter in color—containing no trace of suboxide. These four samples are representatives of Hydrargyrum cum Creta as found in commerce.*

—*Proc. Amer. Pharm. Assoc.* 1868.

Brooklyn, Sept. 8th, 1868.

ON THE DEPOSIT IN FLUID EXTRACT OF CLOVES.

By J. F. Llewellyn.

Query 8th.—What is the nature of the deposit in fluid extract of Cloves on long standing, made by the process of Prof. Procter, reported to this Association? Is it present in the drug, or the result of the oxidation of the oil?

In order to determine whether this deposit exists in the drug or results from oxidation of the oil, I obtained the cloves from the inner portion of a mat opened that day, ground and percolated them the same day. The weather becoming very cold, within a week a deposit of about twenty grains was separated from the percolate from four ounces of the drug; as there was no room for the oil to oxidize, it may safely be inferred that this deposit exists in the drug.

Repeated efforts to sublime it failed, but, when continuously heated, long silky crystals effloresced upon the surface.

* It has long been the opinion of several good pharmaceutists, that this preparation, as made by the officinal process, should be abandoned, and a new formula adopted, containing saccharine matter, as in blue mass. It is possible that glycerin might be used in minute quantity.—Editor Am. Jour. Pharm.

Heated to destructive distillation in the bulb of an arsenical tube, there was found a waxy substance in the tube soft and sticky, almost free from odor, having an empyreumatic taste, but free from the warmth of oil of cloves.

The precipitate boiled in solut. carb. soda dissolved but slightly and with difficulty; it would not dissolve when treated in the same manner with water of ammonia.

It dissolved but little in cold or boiling muriatic or nitric acids, whether concentrated or diluted. Some crystals were obtained from the muriatic acid solution having a garlicky taste, like mustard seed, free from its pungency. These crystals deliquesced in a few minutes after being dried by heat.

The deposit itself is tasteless, and seems to have no medical value, as three one grain doses, taken at intervals of an hour, and followed in fifteen minutes by one dose of three grains, giving thus six grains in two hours and fifteen minutes, had no perceptible effect.

As my experiments seem to have determined that this deposit exists in the drug and has no medical value, I carried the investigation no farther.

Louisville, Ky., Sept. 2d., 1868.

—*Proc. Amer. Pharm. Assoc.*, 1868.

ON SYRUPUS LACTUCARII, U. S. P.

By P. W. Bedford.

Query 29.—Can any improvement be suggested in Syrupus Lactucarii, U. S. P. 1860?

The syrup of lactucarium prepared by the officinal process, while a good remedy, is an unsightly preparation. Can the finished syrup be as efficacious, and yet more pleasing to the senses? Before speaking of the syrup, let us inquire into the article itself. The variety of lactucarium now found in the stores is that known as German; the English I have not been able to find whenever I have inquired for it. This German variety is now worth from $9.00 to $10.00 per pound. According to experiments of E. Parrish and W. C. Bakes (Am. Journ. Pharm. xxxii, 227), this variety yields 36 per cent. of extract when exhausted with diluted alcohol, the English variety yield-

ing 44 per cent. Diluted alcohol is conceded to be the best solvent of the active principles of the drug, and all the published formulæ for the last fifteen years have used this menstruum for the preliminary portion of the process. It requires from eight to ten fluid parts to exhaust the drug. On evaporation of the spirit it deposits a large portion of the soluble matter, increasing in bulk as the liquid portion is dissipated; but on addition of a small portion of alcohol to restore it to the strength of diluted alcohol, it is again restored to perfect solution.

The officinal process, after exhausting the lactucarium (one ounce to make half a pint of tincture), directs the liquid to be evaporated to two ounces, and then added to fourteen ounces of simple syrup.

The undissolved portion is held partly in suspension, and in part deposited, requiring shaking to mix it.

The resulting syrup is cloudy with a yellow-red color, unpleasant to the eye, and not very acceptable to the taste. If, when the liquid has been evaporated to the quantity ordered, a little alcohol is added, a perfect solution is effected of a dark transparent appearance; but when sufficient simple syrup is added to make it the requisite strength, it has the same general appearance of the officinal syrup.

The experiments I made were to obtain a transparent syrup which would retain the virtues of the lactucarium as fully as possible. The process adopted in the U. S. P. 1860 for syrup of tolu seems, with a slight modification, to meet the case. I would suggest the following formula:

Lactucarium, one troyounce.
Diluted Alcohol, a sufficient quantity.
Carbonate of Magnesia, sixty grains.
Sugar, fourteeen troyounces.
Water, four fluidounces.
Orange-flower Water, two fluidounces.

Rub the lactucarium with a sufficient quantity of diluted alcohol to make a smooth paste, transfer to a conical percolator, adding enough diluted alcohol to obtain half a pint of the tincture. Into a mortar place the carbonate of magnesia and one troy-ounce of sugar, add the tincture and four ounces of water,

filter, evaporate at 160° F. to six fluidounces, add the balance of the sugar, and when nearly cool pour into a bottle containing the orange-flower water, and make up with water if necessary to the bulk of one pint.

This syrup has a dark transparent appearance, with a decided odor and taste of the lactucarium, though partly covered by the orange-flower water, which it is thought is a good addition. In order that it may be examined by those present, I have two samples of the syrup in which the orange-flower water is replaced by water.

In the March number of the *American Journal of Pharmacy* for 1868, pp. 113 and 114, are two papers on the subject of syrup of lactucarium. Samples of the syrups by both processes are herewith presented.

—*Proc. Amer. Pharm. Assoc.*, 1868.

ON THE CONTAMINATION OF HYDROCHLORIC WITH SULPHURIC ACID AND OTHER OXIDES OF SULPHUR.

By Dr. E. R. Squibb.

Query 31.—Does the addition of metallic iron or zinc to ordinary hydrochloric acid, which contains sulphuric acid as an impurity, decompose the sulphuric acid and liberate sulphide of hydrogen?

In a discussion of the subject of tincture of the chloride of iron, imperfectly reported at page 97 of the Proceedings of last year, the writer stated, as an observed fact, that the escape of sulphide of hydrogen upon dissolving iron or zinc in hydrochloric acid was an indication of the presence of sulphuric acid as a contamination of the hydrochloric acid, and was a good practical test for detecting sulphuric acid. Mr. Maisch spoke doubtfully upon the accuracy of the statement, and in a subsequent conversation expressed a decided conviction that it could not be true. The writer had seen the proposed reaction so often that he had had no doubt upon the subject previous to Mr. Maisch's remarks, and then proposed to try the point by direct investigation. With this end in view the writer proposed the question as one to be reported on this year, and accepted the investigation for himself.

The investigation has been carefully made, and proves that the escape of sulphuretted hydrogen during the reaction in question

is no evidence whatever of the presence of sulphuric acid, and therefore that the statement of the writer was entirely erroneous, and Mr. Maisch was quite right upon the point of accurate knowledge which he raised.

It became then a matter of interest to the writer to ascertain how the error had occurred. This was satisfactorily determined, and may interest the Association as a part of the history of the hydrochloric acid of commerce.

This acid is often, if not generally, made by the best makers by decomposing common salt in iron retorts by means of sulphuric acid and heat. The gaseous products and vapors from the decomposition are conducted into a series of three or four receivers or Wolf's bottles containing water for the absorption of the hydrochloric acid gas. But the entering tubes of these receivers do not dip into the water as in the ordinary Wolf's arrangement, and the absorption of the gas is therefore slow and passive, only facilitated occasionally by stirring. From the last receiver an ascending series of four or more shallow glass vessels lying upon an inclined plane, and discharging by gravitation one into the other, and the lowest one into the last receiver, are so placed as to receive at the highest end supplies of fresh water from time to time. This water, flowing downward, meets the current of yet unabsorbed gas from the last receiver, and absorbs it all in its progress into the last receiver, which finally contains the best hydrochloric acid of the process, and of the common market. This, when put up for the market, often shows little or no sulphuric acid by the manufacturer's test, which is solution of chloride of calcium. The reaction which occurs in the cast-iron retort from impure materials, and at a high temperature at the close, gives various gaseous products, among which the most common and most copious are the lower oxides of sulphur. It has generally been supposed with reason that small quantities of sulphuric acid also distil over, and that thus the hydrochloric acid becomes contaminated with sulphuric acid. This is doubtless always true with regard to the contents of the first receiver, but is practically impossible to any after the second! Not so with regard to the lower oxides of sulphur, however, some of which are gaseous and all far less easily condensed. These are,

therefore, found in the farthest and coolest receivers, and escape detection by the chloride of calcium test. The hydrochloric acid, which when freshly made contains these lower oxides of sulphur, but no sulphuric acid, will, however, on keeping, soon begin to show sulphuric acid, and finally will contain this acid alone, all the lower oxides being progressively and spontaneously converted into the higher one.

When hydrogen is liberated in a nascent state in the presence of these lower oxides of sulphur, they are all reduced and converted into sulphuretted hydrogen, sulphur and water, leaving the solution comparatively free from sulphur compounds. Thus it happens that when freshly made hydrochloric acid, free from sulphuric acid, but containing the lower oxides, is used for making the chlorides of iron or zinc, the resulting chlorides will be free, or comparatively so, from sulphuric acid and sulphates, while a portion of the same acid, if kept long, will contain sulphuric acid and be comparatively free from the lower oxides of sulphur. Hence the escape of sulphuretted hydrogen during the reaction with these metals is an easy practical test for the lower oxides, but not for the higher.

This best grade of hydrochloric acid is often not accessible to the writer, unless he waits for it to be made, and then it is received quite fresh and new, and is at once used for making the chlorides of iron and zinc. It then gives off sulphuretted hydrogen so copiously that it is necessary to make the solution out of doors, and yields chlorides which are practically, though not absolutely, free from sulphates. Portions of the same lot of hydrochloric acid stored, and used subsequently, have been found to contain largely of sulphuric acid and nothing else. Hence the conclusion that nascent hydrogen decomposed sulphuric acid in this reaction and thus yielded the floating sulphur, and the escaping sulphuretted hydrogen was accepted on very insufficient grounds and erroneously put forth.

All of which is respectfully submitted in answer to Query No. 31.

Brooklyn, August 14th, 1868.

—*Proc. Amer. Pharm. Assoc.*, 1868.

ON SUPPOSITORIES.

By Charles L. Eberle.

Query 30th.—Is there a rapid method for making suppositories whereby the use of a hardening ingredient in connection with cacao butter will not be required?

When suppositories were first re-introduced, and became popular with the medical profession of the day, it was more or less difficult to procure at all times a good sample of cacao butter, and so much of that furnished by the jobber was adulterated with fats having a lower fusing point than its ordinary application suggested, and required uniformly the use of a hardening ingredient when suppositories were to be prepared.

The best samples, however, now furnished for pharmaceutical use are not open to this objection, and in our hottest summer months can be handled with impunity, remaining firm and dense under the necessary manipulation.

No other substance or combination can well be substituted for it in this peculiar application of medicine, or at least none has yet been introduced claiming to supercede it.

The peculiar opinions of different pharmacists regarding the amount of hardening ingredient necessary to be added to cacao butter varying with the individual, I have not found two to accord perfectly.

While Mr. Markoe, in the climate of Boston, uses a proportion of one-third spermaceti, Mr. J. B. Moore, of Philadelphia latitude, whose paper in the May *Journal of Pharmacy* is the most valuable yet contributed on this subject in its practical application, (and whose samples on exhibition at this meeting are perfect specimens of art,) makes no admixture from October to June, thereafter adding a small portion of Japan wax.

The supposed effect of these small additions has been much over-estimated; no appreciable amount of time in hasty preparation is gained by the combination of wax until one-fifth is added, neither with paraffine, spermaceti or the Japan vegetable wax. Cacao butter, at ordinary temperatures after a time, sets in the mould and may be removed by its own gravity; the admixture often aggregates in a few days to a condition requiring more than animal heat for its fusion, and have been complained

of by the physician for producing local irritation or being ejected from the rectum before disintegration.

There are occasional prescriptions of medicinal ingredients where the ol. theobromæ seems to require an addition, and it can properly be made where a large amount of soft medicinal extract is to be incorporated, or a solution of subsulphate of iron, for instance; but the dry powders, vegetable or mineral, need no assistance; they contribute to the hardening of the butter, and in the case of oxide of zinc, carb. of lead, iodides of lead and cadmium, produce rapid aggregation.

The object of using suppositories is only gained where they fuse slowly, at animal temperature.

Mr. Markoe moulds his mixture of wax and butter and has the suppository unmedicated on hand. When the prescription arrives for their preparation, he remelts the number required, and, after medication, remoulds, thus doing away with the trouble of weighing the excipient, and insuring exactness in result—a commendable plan, as you will observe.

The greatest annoyance in the preparation of these appliances occurs when the pharmacist is called at night from his bed, the applicant impatient, weather hot, store close, and flies troublesome, to furnish a dozen or more. There is no supply of ice in his soda water apparatus, cold spring water is not to be had in the cities, and would not largely facilitate their cooling in the mould. The temptation is certainly great to add a large proportion of foreign excipient, and I am aware it is often done.

To reach such victims, who, regardless of a trifling expense, would welcome the departure of his customer, I offer a plan which answers well in practice: Procure a tin box eighteen inches long, six inches broad and six in height, arrange a cover of fine wire gauze, prepare a rest for suppository moulds made of wires crossing at right angles and fastened at each intersection; a ledge of tin is placed on the sides of the box, upon which the wire frame rests. One end of the box, four inches from the top, is perforated three-eighths of an inch in diameter, to admit the discharging tube of an atomizing apparatus. All things being adjusted, the fluid mass is poured into the moulds at the

opposite end of the box from that perforated, or at such nearer position as may be requisite, the gauze cover placed in position and a spray of rhigoline, ether, or a mixture of alcohol and ether discharged against the offending moulds.

The happy pharmacist, satisfied with the rapid cooling, exclaims, "hang the expense," pours from the box what is condensed of the vaporizing fluid and dismisses his customer, alas! too often to again have his blissful dreams disturbed before the advent of a morrow's sun.

Suppositories should always be passed over the counter with direction to keep in a cool place when not wanted for use, and to be then handled quickly. Servants should also be cautioned against placing the bottle in the pocket, or immediately contiguous to the person.

A great need is felt of a *low-priced* suppository adjuster. I am not aware that one exists, but believe the invention would meet with ready sale.

Shaved ice answers better for cooling than broken, or ice and water, a better mixture is shaved ice and salt.

—*Proc. Amer. Pharm. Assoc.*, 1868.

ON THE RELATIVE PROPORTION OF DIGITALIN PRESENT IN AMERICAN AND EUROPEAN DIGITALIS.

By Samuel P. Duffield, Ph. D.

Last year I asked an extension of Query No. 34, viz.:

Do the leaves of the Digitalis purpurea grown in the United States yield less digitalin than the European plant? and is the alleged inferiority of the former, if this be true, due to a deficiency of this principle?

My reasons for asking an extension were that I had not, satisfactorily to myself, blocked out a method of procedure which would answer it best. I had designed estimating the quantity of the alkaloid digitalia by the proposed method of Mayer, by precipitation by means of iodohydrargyrate of potassium, or by Rudolph Wagner's method of iodine in a solution of iodide of potassium. The more I pondered, the more satisfied I became that that process would not give a satisfactory answer, as we have not yet investigated the combinations of the alkaloid with

these reagents, and a good part of it would have to be (on my part) assumption. We have, however, given us in the Dispensatory a method for the preparation of digitalin which is simple and practical. It is true it does not give us the pure alkaloid, but it gives it in a state pure enough for all pharmaceutical purposes, and I assumed therefore that the digitalin meant in query 34 was the "digitalinum" of the [British] Pharmacopœia.*

I accordingly wrote to the house of W. H. Schieffelin & Co. to procure me three samples of digitalis, such as came into the market and were usually sold to druggists. In fact, I desired the three representatives of the goods as they were usually found in the market.

They sent me three varieties:

No. 1. Leaves. Folia digitalis, from George Allen, London, handsomely packed in glass.

No. 2. The ordinarily packed and pressed digitalis of the Shakers of Mt. Lebanon, containing the small stalks.

No. 3. 1 lb. paper package digitalis, German. Name of grower or packer unknown.

The prices ranged as follows:

1 lb. Fol. digitalis, English, glass jar, $1.50.
1 lb. " German, .15.
1 lb. p'kge. American grown digitalis, .30.

French variety could not be obtained.

The process adopted was essentially that of the Pharmacopœia, being a slight modification of Wittstein's method.

One pound avoirdupois (7000 grs.) of the drug was reduced to a powder of No. 60 fineness, and percolated slowly by one gallon three fluid-ounces alcohol, gravity ·835, mixed with two drachms of acetic acid. It was percolated cold. When the percolation was finished the spirit was distilled at water-bath heat, the extract treated with four fluid-ounces distilled water containing one-half drachm of acetic acid, and digested with one drachm animal charcoal (granulated), and filtered. Filtrate was diluted with distilled water, so as to measure a pint in bulk. Ammonia was now added almost to neutralization, and the fluid precipitated with 80 grains of tannic acid dissolved in three fluid-ounces of distilled water.

* Digitalin contains no nitrogen and is not an alkaloid.—J. M. M.

This precipitate was washed with a small quantity of water mixed with one fluid-ounce of alcohol, and carefully triturated in a mortar with one drachm of litharge. The mixture was poured into a flask of one pint capacity, and mortar rinsed with fresh spirit several times, pouring the rinsings into the flask until four fluid-ounces were obtained. This was heated up to 160° temperature, and maintained at that point for one hour. Animal charcoal one drachm was added, solution was filtered, spirit recovered by distillation, and remaining solution evaporated in a chemist's drying oven, at a temperature which did not exceed one hundred and fifty degrees.

The respective yields were as follows:

One pound of English digitalis yielded 63·60 grains.
" American " " 65·01 "
" German " " 56·50 "

This would equal for 1000 parts—

English digitalis, 9·08 grains.
American " 9·30 "
German " 8·07 "

The difference between the American and other varieties I can only account for by assuming that the small stalks which are packed with the leaves in the American sample contain more of the alkaloid than the leaves in proportion. I can prove this to be the fact from my experience with henbane stalks and leaves. But as reasoning by analogy is at best insecure, and often proves fallacious, I simply give you the facts and allow you to draw your own conclusions.

I am compelled to claim for our home-grown digitalis, if rightly dried and gathered, *superiority* instead of *inferiority*, at least reasoning from the samples. The question with me has of late often arisen, whether it is well to reject the stipules and stems; whether we do not lose in so doing what contains a greater amount of alkaloid than the leaf. This is a question which would bear investigation. Both my English and German samples were simply the *leaves*, while the American was leaves and stalks, such as the Shakers usually put up.

Detroit, Sept. 1, 1868.

—*Proc Amer. Pharm. Assoc.*, 1868.

ON THE PREPARATION OF PYROPHOSPHATES OF IRON.

By Samuel P. Duffield, Ph. D.

Query No. 26.—It is found that the process of the Pharmacopœia for pyrophosphate of iron yields a preparation which it is sometimes impossible to scale. Can a better process be devised?

Pyrophosphate of iron rendered soluble by means of citrate of ammonia, was first proposed, by M. E. Robiquet, to the Academy of Medicine at Paris. As prepared by him the gelatinous precipitate was dissolved in citrate of ammonia solution, and a syrup was made from this solution. This process was improved by Prof. Procter; the result was also a syrup. The formula, as it occurs at present in the United States Pharmacopœia, is that of Dr. E. R. Squibb, and exhibits the finished product in scales.

The pharmacopœia process is to ignite the $2NaO, HO, PO_5 + 24HO$, thereby converting it into the $2NaO, PO_5$. This is dissolved in water and mixed with solution of tersulphate of iron, at a temperature not exceeding 50° Fahr.; the resulting pulpy precipitate washed thoroughly and dissolved in solution of citrate of ammonia.

This process I have been disappointed in; it scales but imperfectly, and sometimes not at all.

I am not alone in my complaint; several have tried the same process and failed to get satisfactory results. After having tried faithfully for four times this process, I devised a slight modification, which gave me the most satisfactory results, never failing once to scale handsomely.

The process: Take of the magma obtained from 8½ oz. of pyrophosphate of soda (which is about 6½ times as much by weight):

Aqua ammoniæ, ...	1 pint.
Citric acid, ...	6 oz.

Mix the pyrophosphate of iron (the magma) with the ammonia and digest at a gentle water-bath heat for 6 to 8 hours; then *gradually* add, constantly stirring, the 6 oz. of citric acid, dissolved in two pints of distilled water, *until* the ammonia is *neutralized* and the precipitate dissolved. Filter or decant, if

necessary; evaporate to the consistency of a thick syrup; paint on glasses and scale as usual. The change which takes place on the addition of the ammonia is different from the appearance produced by the addition of citrate of ammonia solution.

In the case of the addition of aqua ammoniæ, the magma turns, in a few hours, of brick-red color; and in the case of the addition of citrate of ammonia solution, it dissolves to a green color, similar to the iodide of iron liquor, before adding the syrup.

If now you add the citric acid to the brick-red colored magma, it gradually dissolves and becomes a greenish color by transmitted light, and dark-brown, almost black, when concentrated, by reflected light.

That there is a different apportioning of elements produced by the modification no one can deny. In the first you have pyrophosphate of iron in solution by means of citrate of ammonia, a mixture of neutral salts. In the second you have, on the addition of ammonia, pyrophosphate of ammonia and sesquioxide of iron, which latter exists in a free state. On the addition of the citric acid it unites with the sesquioxide of iron, forming the citrate of the sesquioxide mixed with the phosphate of ammonia. I think from this it will be seen that the composition is changed, the iron in the Pharmacopœia formula (Squibb's,) existing as a pyrophosphate; the iron in my modification existing as a citrate of the sesquioxide.

As the Pharmacopœia Committee consider their preparation an intimate admixture of ferruginous and ammoniacal salts, I do not consider I have *violated* the U. S. P.

Detroit, Aug. 5, 1868.

—*Proc. Amer. Pharm. Assoc.*, 1868.

ON THE USE OF YELLOW WAX IN OINTMENTS.

By Ferris Bringhurst.

Query 35.—It has been asserted that yellow wax is better than bleached wax for the preparation of Ceratum and Unguentum adipis. If this be true, what principle in the crude wax possesses this property, and for what extent of time may its conservative power be relied on?

In reply to query 35th the writer, to whom the matter was referred, regrets his inability, either from the writings of others or his own experiments, to say with certainty to what principle yellow wax owes its preservative properties; but inclines to the belief that it is balsamic, containing benzoic or some analogous acid.

To give some idea of the length of time for which the conservative power of yellow wax may be relied on, the writer would ask attention to the samples of cerates which accompany this paper.

No. 1. Ceratum adipis, made with good yellow wax January 25th, 1867, and now nearly twenty months old, is in a good state of preservation.

No. 2. Ceratum adipis, made with Phillips' strained yellow wax, March 11th, 1867, now about eighteen months old, is in a good state of preservation.

No. 3. Ceratum adipis made with Phillips' bleached wax, March 11th, 1867, now about eighteen months old, bears decided evidence of rancidity.

These samples were all made from the same lot of lard, have been kept partly in the cellar and partly on the shelves in the store, exposed to the same temperature that the cerates of the shop are required to stand; generally covered to keep out dust, but always together, and hence under precisely the same circumstances.

The writer would here state that in former times, when using bleached wax, he has often been obliged to throw away portions of simple cerate as unfit for use on an inflamed surface, but that since using the yellow wax (now about four years) no such occasion has arisen.

In the preparation of cold cream, which is required to be particularly white, the writer continues the use of bleached wax; but in making glycerin cream yellow wax is used, and, while the latter keeps perfectly well, the former sometimes bears evidence of rancidity perceptible over the perfumed waters and essential oils in its composition.

In making ceratum plumbi sub-acetatis, or Goulard's cerate, which is perhaps the most difficult to preserve of the officinal ce-

rates and ointments, the writer uses yellow wax, and finds it to keep much better than when made with white wax, though there is one slight objection to its use, which is the change of color, at least in the surface, from yellow to white, partly from a partial decomposition of the sub-acetate of lead and deposite of carbonate. Of course the same decomposition occurs with the use of white wax in this cerate, but not the change of color.

Samples 4, 5 and 6 will show to some extent the difference in the use of yellow and bleached wax in the preparation of this cerate.

In conclusion, the writer would remark that he conceives that in bleaching wax not only is the balsamic or preservative principle destroyed, but that during the process rancidification is started in the wax; and that as old vinegar or "mother" superinduces the acetous fermentation in cider, so bleached wax renders rancidification more certain and rapid in all cerates and ointments in which it is used.

—*Proc. Amer. Pharm. Assoc.*, 1868.

ON THE SALTS OF CONIA.

By George C. Close.

Query 33d.—Conia has been recommended as a therapeutic agent, but is liable to alteration from atmospheric oxygen As the salts of conia appear to be permanent and are odorless, why may not some of these be substituted for the alkaloid?

The assertion in the query that the salts of conia appear to be permanent, is contrary, I believe, to the authorities on the subject, except with regard to the muriate, which Prof. Wertheim asserts to be crystallizable and not in the least deliquescent. The method which he suggests for making the muriate is the combining the vapors of the two substances directly. This method, to be successful, would require a larger quantity of the conia than I could afford to use, as the cost is eight dollars for what purports to be an ounce of the article.

I succeeded in making a crystallized muriate by dissolving 30 grs. of the conia in 2 fluidrachms of dilute muriatic acid, previously diluted again with its bulk of water, and evaporating the solution by means of a water bath.

Heat is developed while dissolving the conia, and white vapors are evolved at first, which, even when the mixture is made in a well corked bottle, will sometimes escape partially.

Some of the crystals obtained by the evaporation of the mixture were exposed for several weeks in an open capsula. They became alternately wet and dry, according to the state of the weather. From this I infer that they are hygrometric but not deliquescent.

I swallowed half a grain of the crystals which had been so exposed (dissolved in water), without apparent effect. I then took one grain, which produced the characteristic effects of the conia to such an unpleasant degree that I should be loth to repeat the dose. I am far less susceptible to the action of conia than many persons. This seems to show that the salt will retain its medicinal properties after several weeks' exposure.

I did not succeed in obtaining a crystallizable salt with sulphuric, citric or oxalic acids.

The conia used was made by Merck. This appears to be the only kind in market. Its quality is not uniform, as in some instances it will not all dissolve in the dilute acid, but an oily residue is left.

I presume the muriate of conia might be made directly from the fresh plant or fruit at less expense than the conia, and have no doubt but that it would be far more convenient and reliable for medicinal use than the latter.

I do not claim to have exhausted the subject of the query, and shall be very glad if some member who has more skill, more apparatus and more money will take it up and investigate it more thoroughly than I have done.

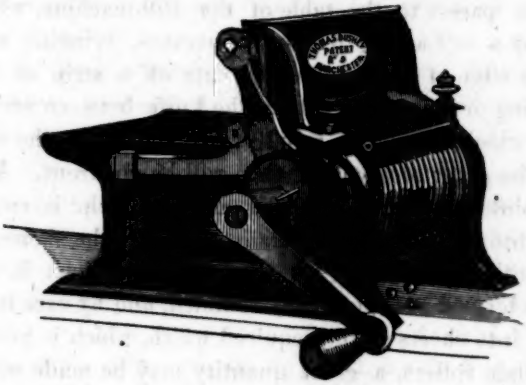
I present a sample of muriate of conia, probably not quite pure, but sufficiently so for practical purposes.

—*Proc. Amer. Pharm. Assoc.*, 1868.

BUSHBY'S PILL MACHINE.

One of the most important inventions directly affecting chemists and druggists which has come before us for a long time, is that which is here represented. The wearying work of pill-mak-

ing, which is to some druggists the one horrible skeleton which haunts their business life, has induced many attempts to construct a simple machine possessing sufficient intelligence to convert a large mass into equal-sized and properly-shaped pills. A machine for this purpose has, we believe, been in use for many



years at a few of those establishments—such as Holloway's and Cockle's—where pills are turned out by the hundred-weight. But the great expense, the unnecessary elaborateness, and, we may add, the many imperfections, of this machine, have altogether prevented its general introduction among the druggists of the country. We had heard of Mr. Bushby's invention, and had much pleasure, during a recent visit to Manchester, to take advantage of the opportunity to examine it for ourselves. Its first recommendation is its exceedingly pretty appearance. Mounted on a mahogany stand, it forms, when not in use, a very attractive object for the counter, and we are inclined to think that a little mysterious machinery about a chemist's shop often adds to his reputation as a scientific man, and helps to maintain the dignity of the profession. The invention and perfection of this machine must have cost Mr. Bushby a vast amount of thought and labor; but we believe the general verdict of the trade will in the end reward him for his perseverance. The difficulty of adapting a single machine for the purpose of going through the several processes of rolling, cutting and rounding at one and the

same time, and by one motive power, has been most completely overcome.

The "pill mass" is first passed between two plain rollers, fitted with adjusting screws, to form it into a sheet of the thickness required for the size of pill to be made, the thickness of the sheet necessarily determining the size of the pills. The sheet then passes to the table of the Pill-machine, where it is caught by a self-acting feeding apparatus, bringing a portion under the edge of a knife, which cuts off a strip or bar, such strip falling or being carried by the knife between semicircular grooves, which, revolving rapidly, cut and form the strip into pills. The great economy of time will be apparent. The sheet being unintermittently advanced as each strip is cut off and formed into pills, another instantly follows, the shower of pills being continuous as long as the necessary sheet is supplied. The pills formed are spherically rounded, and by care in forming the mass into sheets of the required width, which is provided for on the plain rollers, a great quantity may be made without the waste attending the old process by hand. About one thousand pills per minute may be made by the machine. It can, however, be made capable of making much greater quantities if rerequired. The machine is not liable to get out of order, the workmanship being good and the mechanism simple—its great merit.

Pill-making will be, with this apparatus, no longer a disagreeable part of the pharmaceutist's duty, but a pleasant recreation, and if he has any young children, the working off of a two or three pound mass into pills could hardly fail to prove "a constant source of amusement," as the toy-dealers would remark, the only drawback being that, like fireworks, the fun would be all over in a few minutes. We commend his machine because it appears to us excellently adapted for the purpose, and we should like our practical readers to take the first occasion which presents itself of examining the merits of the invention. Several testimonials which Mr. Bushby has already received from competent judges confirm the favorable opinion we have expressed. —*Editor Chemist and Druggist, London, November* 14, 1868.

SENNA.

By Thomas B. Groves, F.C.S.

What I have to say about this interesting article of Materia Medica will be confined to its chemical history, ancient and modern, and will include an account of some attempts I have recently made to set at rest disputes as to the nature and properties of its active principle.

A comparison of the statements of authors of repute respecting this active principle will show at once the necessity there existed for bestowing further labor on the subject. The analyses given by Pereira comprise one by Braconnot of the watery extract of Alexandrian senna, one by Lassaigne and Fenuelle of senna leaves, and one by Fenuelle of senna legumes. It will be sufficient for my purpose to quote parts only of these analyses. Thus Braconnot finds in 104·2 pts. of watery extract of Alexandrian senna 53·7 pts. of the bitter matter of senna; as senna is not bitter when unmixed, it is pretty clear that Braconnot operated on a sample of senna containing the bitter leaves of *Cynanchum Argel*, without making allowance for the fact. He mentions also 31·9 per cent. of reddish-brown gum—a most indefinite term. On the whole, it may be said that the analysis is perfectly useless.

Lassaigne and Fenuelle give a qualitative statement only, at the head of which figures cathartin, a principle (?) found also in senna legumes by Fenuelle. This substance is described as being yellowish-red, uncrystallizable, with a peculiar odor and a bitter nauseous taste, very soluble both in water and alcohol, but insoluble in ether. Its aqueous solution is precipitated by infusion of galls, diacetate of lead, etc., etc. Three grains caused nausea, griping and purging. Its preparation is thus effected. To a filtered decoction of senna add acetate of lead, filter, remove the excess of lead with sulphuretted hydrogen, filter and evaporate to an extract, which exhaust with rectified spirit; again evaporate to an extract, add a little sulphuric acid to remove potash, present in combination with acetic acid, and finally purify *secundum artem* from traces of lead or of sulphuric acid if necessary. This substance, which I need scarcely say is not worthy of the

name of "active principle," inasmuch as it is quite destitute of "activity," and is not a "principle" but a complex mixture, long passed muster as the so much desired and so often missed senna cathartin; its discovery was announced in 1821. Bley and Diesel pronounced it to be a mixture of resinous and extractive matters; they might with truth have added "derived partly from senna, partly from *Cynanchum Argel.*"

In 1845 a prize of 500 francs was offered by the French, for the best essay on the chemistry of senna, but an answer not being forthcoming, the offer was renewed in 1857, the prize being increased to 1000 francs—still no response.

In the same year, however, Martius gave the subject his attention, and pronounced an opinion that senna owed its activity to chrysophanic acid, a body of very stable constitution, and in that respect very unlike what might have been expected from senna. Its hitherto acknowledged sources were rhubarb and the lichen *Parmelia parietina.* Martius was controverted by Sawicki, who urged the little solubility of the acid. Wiggers, however, came to the rescue with a suggestion that the combination of the acid with certain bases would give it the required amount of solubility in water.

In this there is a somewhat near approach to truth; Martius may be said to have "burned," but he did not "touch" the coveted principle.

Before proceeding to the analyses of senna, published within the last few years, I will refer to the notions of the ancients as to the proper modes of preparing senna for administration. It will be found that our remote predecessors were not deficient in the power of observation, whatever what might have been their deficiencies in scientific knowlege; that their practice if not their theory was correct. Thus the Arabian physicians held that long boiling impaired its activity, so did Culpepper, and cautions accordingly. Heerlein, a modern writer, denies this, but not upon satisfactory grounds. Its purgative power is said by some to be increased by combining with the senna any simple bitter. The infusum amarum purgans and the mist. gentianæ co. owe their origin probably to this idea. It might even throw light upon the practice (which undoubtedly was not of modern invention) of

"adulterating" Alexandrian senna with the leaves of *Cynanchum Argel.* As the latter are now known to be destitute of purgative power, and purely bitter, it would be interesting to ascertain the comparative potencies of pure senna, and of that mixed with cynanchum. Should it turn out that the admixture really effects an improvement of quality, we may perhaps, without great stretch of charity, ascribe the systematic admixture of the two leaves to a desire to improve the article. Cheapen it, it does not. It has been remarked with wonder by travellers, that the senna leaves are quite as easy obtainable as those of the plant used presumably for its sophistication.

Senna was invariably exhibited in a watery vehicle, and this is as it should be; strong spirit fails altogether to extract its active principle, notwithstanding Christison's statement to the contrary.

Among the more noteworthy examinations of senna of recent date are those of Robert Rau, of Bethlehem, Pennsylvania, and of Professor Dragendorf and Herr Kubly, of Dorpat.

Rau's results have since been disproved, but as his experiments present many points of interest I will shortly enumerate them. The paper will be found *in extenso* in the *American Journal of Pharmacy* for 1866. He commences by asserting the inertness of the resin extracted from senna by the use of alcohol, and in that is perfectly correct.

The active principle being supposed still to remain in the residue of the operation, the senna is extracted next with cold water, and to the infusion diacetate of lead is added in excess. The filtrate from the precipitate thus formed is freed from lead by sulphuric acid, and being then evaporated, the sweet extract was found destitute of purgative action. He found the same inertness in that part of the extract soluble in spirit—the so-called cathartin of Lassaigne. The yellow lead precipitate was next examined. When dried and boiled with alcohol it yielded a substance of a deep yellow color which was darkened by alkalies. It consisted of two resinous bodies, chrysoretin, etc. The residue suspended in water was decomposed with sulphuretted hydrogen, and furnished only a "*tasteless, gummy substance of acid reaction,*" that seemed unworthy of further notice.

The dried sulphide boiled in alcohol yielded a resinous, very nauseous substance insoluble in water, soluble in alcohol and in ether.

The dried sulphide boiled in ether gave a crop of interlaced acicular crystals of dirty white color, at first tasteless, afterwards persistently bitter and nauseous. Five grains purged actively five hours after taking. A second quantity of crystals was obtained from the liquid by treatment with animal charcoal, and boiling as before in ether. He claims for this substance the position so long usurped by the pretended senna Cathartin of Lassaigne and Fenuelle, and names it "Sennin."

The characteristics of this new "Sennin" are thus described:—It is insoluble in water, cold or hot, insoluble in acids, insoluble in alkalies, insoluble in cold alcohol; soluble, to some extent, in hot alcohol and in ether, but especially soluble in chloroform. All this being true, how on earth could the sennin have been induced to leave its nidus by the mere action of cold water? This consideration determined me on repeating the experiment, but fortunately I was saved the trouble by the announcement of Herr Kubly, who has carefully trodden the same path as Mr. Rau, but with greater discernment, that the "dirty-white interlaced acicular crystals" were in point of fact neither more or less than sulphur. It must, however, be remembered to Mr. Rau's credit, that he gave the finishing blow to the pretensions of Lassaigne's Cathartin, and also proved the incorrectness of Martius' assertion respecting chrysophanic acid—it exists in senna in very minute proportion only.

My own experiments were commenced in 1862, by an examination of the precipitate that so invariably collects at the bottom of old samples of Liquor Sennæ. I found it to consist of phosphate and sulphate of lime combined with resinous acids, some of which were soluble in alcohol, some in ether, some only in alkaline solutions. The whole treated with liquor potassæ in considerable excess, dissolved, producing a rich brown color. From the filtered solution hydrochloric acid precipitated the resins—brown in color when pulverulent, black when fused into masses. Eight grains of this substance taken for a dose produced no effect whatever on the bowels. As similar resinous

acids were not precipitable from liquor sennæ by acids in the cold, I at once suspected that they derived their origin from the slow decomposition of an unstable glucoside. Another supposition that they were products of oxidation was negatived by the fact, that the precipitation occurred in perfectly closed vessels. An examination of liquor sennæ presented the following reactions:—It was acid to test-paper. When treated in the cold with weak hydrochloric acid it did not deposit anything material before ten or twelve hours had elapsed. Boiled with any mineral acid it deposited a considerable amount of dark resin, leaving the fluid nearly colorless. Comparative tests before and after boiling with acid, with Fehling's liquor showed that the proportion of glucose had been increased by that treatment. Neutral acetate of lead threw down an abundant pale precipitate. No precipitate of consequence was obtained by using either tannin, ammonia, or iodo-hydrargyrate of potash. Basic acetate of lead applied to the filtrate from the neutral acetate, produced an abundant orange precipitate, leaving the liquid to all appearance destitute of any active principle of senna. This lead precipitate, treated with cold dilute sulphuric acid, yielded a dark solution, that when boiled with a mineral acid yielded a resinous precipitate, and a disagreeable smell of stale senna. The lead was therefore in combination with the glucoside, for which I was in search. Guided by these results, my experiments were resumed on a larger scale.

A quart of Liquor Sennæ, that within a fortnight of its preparation had commenced to deposit resin, was neutralized with ammonia. The precipitate obtained consisted mainly of phosphate of lime.

Neutral acetate of lead being added in excess to the filtrate a precipitate was obtained, consisting of certain organic acids in combination with oxide of lead. This precipitate washed, suspended in water, and decomposed by sulphuretted hydrogen furnished a brown acidulous liquid, which was decolorized to some extent by animal charcoal, and then neutralized with baryta water. Of the baryta compounds one part was soluble, the other not. The insoluble part was treated with sulphuric acid, which eliminated the organic acid. The soluble part was reprecipitated

with acetate of lead, and decomposed with sulphuretted hydrogen. The acids thus obtained were compared in their reactions with the better known organic acids, but could not be identified.

As I was unable to devote to the subject sufficient time for complete examination, and the results were not likely to be of pharmaceutical interest, I handed it over to Dr. Attfield, with a request that he would put one of his senior pupils upon it, if he thought the subject worth following up. I thought it not unlikely that the inquiry might result in filling up some gap in a homologous series, and thus be of scientific interest. I understand that the subject is in the hands of the senior Bell Scholar.

The addition of diacetate of lead to filtrate No. 2, produced a copious orange precipitate, which, when washed and diffused through water, was decomposed with sulphuretted hydrogen. The brown acid liquid that resulted was warmed, neutralized with ammonia and evaporated to dryness; redissolved in water, spirit of wine was added till a precipitate began to form. This precipitate consisted of sulphate of ammonia, in small quantity. The liquid poured off from this was treated with a larger dose of spirit, when the greater part of the glucoside acid, combined with ammonia, fell to the bottom in a treacly mass. This looked so little like an active principle, and was so perfectly devoid of taste or smell, that I at once jumped to the conclusion that it could not be the thing I wanted. I therefore passed it over, as did my forerunner, Mr. Rau, without administering one dose even, and prosecuted my research in the liquid, from which, in combination with lead, it had been precipitated. The results, however, were purely negative.

I then macerated 33 ounces of Alexandrian senna leaves (unpicked) with 5 pints of methylated spirit, and, at the end of ten days, pressed and filtered. The spirit, a little water being first added to the liquid, was evaporated, and the resinous oily substance removed carefully from the aqueous fluid it overlaid. It was apparently destitute of medicinal activity—the bitterness of the tincture being concentrated in the fluid. Diacetate of lead added to this produced an orange precipitate of certain coloring matters, of no pharmaceutical importance. The filtrate, freed from lead, was still bitter, but became less so on evaporation.

During the process a dark-colored resin separated. From the strong solution a little rectified spirit precipitated sulphate of ammonia and other salts, and then, twice its volume of ether being added, a dark-colored sweet extractive was thrown down. The filtrate, after evaporation, etc., was a second time so treated and a second crop of extractive obtained.

The ether-spirituous solution shaken with water, yielded to it a bitter substance of dark color and not unpleasant flavor. In doses of 5 grains it had no effect whatever on the bowels. The extractive was also inoperative. The bitter was doubtless derived from the Cynanchum, of which it may be said to be the active principle.

The marc from which the spirituous tincture had been pressed was now exhausted with water, and, from the infusion, purified from the senna acids by acetate of lead, the glucoside acid was precipitated with diacetate of lead. This compound having been decomposed with sulphuretted hydrogen and ammonia added, the glucoside was precipitated in combination with ammonia by rectified spirit. It remained now as a last resource to try its medicinal effect; not with much hope of result, but still acknowledging the possibility of this tasteless and apparently inert substance being so modified in its course through the system (bearing in mind also that senna acts only indirectly on the bowels), as to enable it to produce the cathartic effect I desired to experience. On taking a dose of 5 grains, I was pleased to find that some disturbing effect was produced. A repetition of the experiment enabled me to decide that the glucoside was the active principle of senna. Flattering myself that I had made a discovery of something not hitherto announced, I proceeded to prepare the glucoside by precipitating it directly from a concentrated infusion of senna, in combination with the bases—lime, magnesia, add potash, with which it is naturally associated. I found that the first precipitate was much contaminated with the senna acids in combination with lime, and was of little virtue; the second precipitate was more active, and of this 4 grs. acted fairly as a purge.

Just at this time I became aware of the existence of the paper on senna by Dragendorff and Kubly. It was pointed out to me

by our President, who kindly sent me a *résumé* of the work, translated from the German *Quarterly Journal of Practical Pharmacy*. It was now evident that, as to the facts I had laboriously discovered, I had been forstalled by the German professors. I therefore abstained from a minute examination of the glucoside, and devoted myself to attempting its preparation by a *cheap* and easy method adapted to the purposes of pharmacy. I must confess that my results hitherto have not been sufficiently good to warrant my enlarging at present upon my numerous experiments in that direction. I will give shortly, in conclusion, Dragendorf's results, adding a few remarks of my own on the pharmaceutical preparations of senna.

The glucoside acid, that now is known to confer on senna its purgative property, has been named by its discoverers Cathartic acid. Its formula has been stated as $C_{180}H_{96}N_2SO_{82}$, which, if true, accounts for its extreme instability. It is insoluble in water, strong alcohol, and ether, but enters readily into watery solution when combined with alkaline and earthy bases. Its ammonia salts give brownish flocculent precipitates with salts of silver, tin, mercury, copper, and lead. Antimonial salts, tannin, yellow and red prussiates, have no effect upon it. Alkalies, aided by heat, act destructively upon it; boiled with a mineral acid it splits into a peculiar kind of glucose and an acid that has been named Cathartogenic. Its formula is said to be $C_{132}H_{58}N_2SO_{44}$. Cathartic acid, in a combined state and of tolerable purity, is prepared by partially precipitating by strong spirit a watery infusion of senna, concentrated to a syrupy state by evaporation *in vacuo*. The filtrate is now treated with a much larger bulk of absolute alcohol, and the precipitate thus obtained is purified by repeated solution in water and precipitation by alcohol.

To obtain the pure acid, advantage is taken of its colloidal properties; the crude cathartate is dissolved in moderately strong hydrochloric acid, and subjected to dialysis on a diaphragm of parchment paper. The minimum dose of this pure acid was found to be about $1\frac{1}{2}$ grains, which caused several stools with decided griping.

The combinations of cathartic acid that I have made are, the

cathartate of ammonia, prepared from cathartate of lead by my original process, and the mixed cathartates, prepared according to Dragendorf's method as modified by myself. Of the former nearly pure salt, I have found 3¾ grains to purge fairly as to amount, but slowly as to time, and with considerable griping. Of the latter, 7½ grains purged violently with much griping and sickness, which continued through the greater part of the day, completely knocking the patient out of time; 4 grains, would, I think, be a fair dose. It should, however, be given in conjunction with a saline and an aromatic corrective of some kind. With phosphate or potassio-tartrate of soda an agreeable and effective aperient might be formed; possibly the cathartrate itself might be modified in its action by opium, belladonna, or hyoscyamus. I cannot affirm, however, that the active principle has a more unpleasant action than the raw drug, but such I should expect to be the case.

It obviously would be improper to combine senna with any of its metallic precipitants should such be desired, which is not likely. It is here satisfactory to observe that the cathartate of magnesia is soluble, and that the old-fashioned black draught agrees with new-fashioned science.

The effect of acids on senna must not be overlooked. The mineral acids precipitate, aided by heat they destroy, its active principle, as I have pointed out already. The organic acids precipitate it from its aqueous solution, but *do not* decompose it on boiling. Here then is a very important distinction, one that saves the credit of such preparations as the old Infusum Sennæ Limoniatum, Decoctum Tamarindorum cum Senna, and others of the class, not forgetting the much used Conf. Sennæ Co.

The long-continued action of heat on cathartates exposed to air in watery solution, is to decompose them, rendering them inert. Decoctions and extracts of senna are therefore to be made with proper precautions, or preferably abandoned in favor of the recent and quickly-made infusion.

Fermentation either of the infusion, pure and simple, or of the infusion made into syrup with sugar, decomposes the glucoside most completely. I have been assured by a constant taker of

Ess. Sennæ Dulc., that the latter part of the bottle of essence is never so active as the first. Particular care, therefore, should be taken to obviate fermentation. The best way to do so is to add to each fluid ounce of syrup two minims of chloroform dissolved in a little alcohol. Chloroform will not only prevent fermentation, but will at once arrest it when in full swing. The fact is worth repeating, if already known.

As regards the relative values of Alexandrian and Tinivelly sennas, my experiments go to prove that the former yields half as much again of the active principle as does the latter.

I have made no experiments on the follicles of senna. They were preferred by Mesue. Pomet states that they are equally efficacious as the leaves, without partaking of their noisome flavor. Dodoens gives a very quaint and accurate summary of the whole therapeutical question, part of which I will, as a conclusion, venture to transcribe:—

"The coddes and leaves of sena are hoate in the seconde degree and drie in the first.

"The coddes and leaves of sena taken in the quantitie of a dram, do lose and purge the belly, scoure away fleme and choler, especially black choler and melancholie.

"The leaves of sena are good for people that are geven to be sadde, and pensive, dul, and feareful, and that are sodainely afrayd for litle or nothing. They are good agaynst all stoppinges of the liver, the splene, agaynst the paynes of the head, the scurffe, manginesse, itche, and lepzie. In fewe wordes, the purgation made with the leaves of sena, is good agaynst all diseases springing of melancholie, adust, and salt humors.

"The coddes, after the opinion of Mesue, are best to be used in medicine, and next the leaves, but the stalkes and branches are unprofitable. Sena provoketh windinesse and gripinges of the belly, and is of a very slacke operation. For a correction or remedie, you must put to sena annys seede, ginger, and some sal gemme, or you must boyl it with annys seede, raysons, and a little ginger; for being so prepared and drest, it maketh his operation quickly and without any greefe."

NOTES ON LEMON-JUICE AND ITS DECOMPOSITION.

By W. W. Stoddart, F.G.S.

The long continued separation which a sailor afloat endures from all that is fresh and varied in his food, especially from that of a vegetable nature, has always been known to be productive of disease.

For many years the physician has known that the free use of fresh vegetables, or a sufficient quantity of the juice contained in the hesperidia of lemons (*Citrus Limonum*), or of limes (*Citrus Limetta*), will speedily ensure a cure of the unfortunate patient.

The two latter, from their easy preservation and portability, have been a *sine quâ non* with sailors—so much so, that the marine authorities have ordered every ship to have in its stores a quantity proportionate to the crew. In this respect, as in many others, poor Jack has been grossly victimized by the rascality of dishonest dealers; probably I should not be far from the mark, if I said that half the liquid sold as lemon or lime-juice has been a mineral rather than a vegetable production. A modern author coolly informs us that an artificial solution of sulphuric acid is more agreeable to the nautical palate than the true juice!

As long ago as 1795, the Admiralty issued orders that ships should carry a supply of lime or lemon-juice, but ever since that time this well-meant regulation has been rendered null and void by the wretched trash that has been bought and sold. An immense quantity of lime and lemon-juice being required in the market, and the supply to a certain extent limited, the most abominable and fraudulent adulterations have cruelly been the rule instead of the exception, and many times a genuine sample could not be bought at any price. The Board of Trade, being aware of this, wisely resolved to pass, in the present year, "The Shipping Act."

This compels the mate of every foreign-going ship to provide so much lime or lemon-juice, that each man may have at least one ounce per diem, so soon as the vessel has been ten days at sea. That for forty men, 1 gallon should be kept; for sixty, 2 gallons, and so on. It goes on to summarily forbid every captain to take on board any lime or lemon-juice that has not been

passed by an officer appointed by the Board for that purpose. It is to be tested for gum, sugar, citric acid, and general freedom from adulteration. It is to have a specific gravity of not less than 1·030 and not less than 30 grs. of citric acid per ounce, and to have a proper taste, color, odor, and consistence. The consternation among the merchants holding large quantities of lemon-juice may easily be imagined, for although the Board of Trade has given considerable latitude in their requirements, yet hardly any in the market would stand the tests, and pass the examining officer. Not an ounce of genuine juice was to be bought in Liverpool, Birmingham, or Bristol.

This then being the case, naturally led to a great many analyses of samples from various quarters. The author was thus attracted to the present subject by the wide discrepancy between the result of his experiments, and the information published in our best books.

For instance, Pereira gives an analysis of lemon-juice by Proust, showing that it contained 1·77 per cent. of citric acid, or about 10 grains per ounce. The specific gravity is not mentioned. It is surprising that the statement should have been introduced into the last edition of that work. In our excellent *British Pharmacopœia*, *freshly pressed* lemon-juice is said to have an average specific gravity of 1·039, and an average quantity of 32·5 grains of citric acid per ounce. These two do not agree; the specific gravity is too great for the acid. In Muspratt's "Dictionary," juice containing seven per cent. or 31·5 grains per ounce, is termed very superior. In Mr. Watt's splendid work, 4·7 per cent. or 20½ grains per ounce is quoted as the amount. Muspratt says that lemons at an earlier part of the season are more acid, and as the season advances the water is a percentage or two higher. All these statements are so greatly at variance with the results I have found, that I am induced to bring the subject before the Conference.

As will be seen, the Board of Trade have fixed very liberally for the vendors the specific gravity of 1·030 as the standard, and 30 grains per ounce as the *least* quantity of acid.

On February 25th of this year I bought a lot of lemons from six different shops, and after mixing them, I pressed eight, which

gave seven ounces of juice, having a specific gravity of from 1·040 to 1·046, and yielding 40 to 46 grains per ounce, or 9·6 per cent. of citric acid.

The specific gravity was taken by one of Griffin's hydrometers, as ordered by the Board.

	1	2	3	4	5	6	Average.
Crystallized Citric Acid	42·90	40·05	41.74	39·02	44.60	46 0	42·53
Gum and Sugar	3·45	2·39	3·03	2·96	3·67	3·64	3·19
Inorganic Salts	2·58	1·18	2·38	2·22	2 61	2·73	2·28
Total grains per ounce	48·93	43·62	47·15	44·20	50·88	53.27	48·00
Specific gravities	1·043	1·040	1·042	1·040	1.045	1.045	1·044

The remainder of the lemons was put aside till the end of May, and again examined. The result was thus:—

	1	2	3	4	5	6	Average.
Crystallized Citric Acid	40·90	39·65	39·66	36·38	43·93	45·77	41·04
Gum and Sugar	4·33	2·63	4·51	4 25	3·92	4·44	4.01
Inorganic Salts	2·58	1·18	2·38	2·22	2·61	2·73	2·28
Total grains per ounce	47·81	43·46	46·55	42.85	50.46	52·94	47·33
Specific gravities	1·041	1·039	1·040	1·038	1·044	1·044	1.041

It will therefore be observed that, as the lemons were kept, and the summer advanced, the quantity of acid decreased (at first slowly, but at length very rapidly), but the specific gravity only suffered comparatively slight diminution; the quantity of the juice also remained the same, for eight lemons yielded 7 ounces in May as in February.

On examining the remaining fruit in July the curious fact was ascertained that, although the specific gravity was 1·027, yet there was not a particle of citric acid. Analysis showed that it had all split up into glucose and carbonic acid.

Since this, the nitrogenous matter in the juice has again set the whole into fermentation. The glucose has produced alcohol, and the alcohol acetic acid, thus:—

$$\underset{\text{Glucose.}}{C_{12}H_{24}O_{12}} = 4\underset{\text{Alcohol.}}{(C_2H_6O)} + 4CO_2.$$

Then, after passing through the intermediate stage of aldehyde,

$$\underset{\text{Alcohol.}}{4(C_2H_6O)} + 8O = \underset{\text{Acetic Acid.}}{4(C_2H_4O_2)} + 4H_2O.$$

This result you have before you on the table.

On examining a vessel containing a large quanty of lemon-juice, the peculiar earthy smell of carbonic acid is distinctly perceptible. For a clearer proof, a quantity of juice was put into a bottle which was connected by a glass tube with lime water, beneath which the glass tube dipped; all was hermetically sealed and laid aside, when the deposition of carbonate of calcium became sufficiently evident.

The decomposition would be explained thus:—

$$\underset{\text{Citric Acid.}}{3(C_6H_8O_7)} + 3O = \underset{\text{Glucose.}}{C_{12}H_{24}O_{12}} + \underset{\text{Carbonic Acid.}}{6CO_2}.$$

This change is of course one example among many of the chemical transformations which take place in the maturation of fruits, and a striking one it is.

Freshly expressed lemon-juice is a thin, milky, slightly yellowish liquid, having a sp. g. from 1·040 to 1·045, and containing from 39 to 46 grains of citric acid per ounce. Should either of these be less, the lemons must have been kept too long or gathered too late in the season.

Liquor potassæ turns the juice a peculiar dark color, well known to those accustomed to diabetic examinations.

When freshly pressed the smell is aromatic, but when kept for a few days acquires the mouldy flavor which the commercial juice usually possesses. Trommer's and Fehling's tests give a decided indication of glucose.

With polarized light the ray is turned to the right. Acetate of lead gives a muddy white precipitate (gummate of lead).

Chloride of barium, nitrate or acetate of potassium, or chloride of calcium should give no precipitate, indicating the absence of sulphuric, tartaric, or oxalic acids. The aroma of the pure juice is very peculiar, and differs as much from any artificial compound as rose-water distilled from the petals does from that made with otto.

The juice from limes is not so acid as that from lemons.

Through the kindness of a friend I obtained a dozen limes

from Glasgow, from these I obtained 5½ ounces of juice. This was very much more aromatic and more delicate in its flavor than lemon-juice. Its sp. g. was 1·037, and contained 32·22 grains per ounce. It was, therefore, not so strong as lemon-juice.

Messrs. Southall, of Birmingham, furnished a sample as coming from the Olveston Plantation, in Montserrat, which had a deep yellowish-brown color; this, I presume, was given artificially, as that pressed by myself from the fruit was nearly colorless.

This coloration has since, however, been shown to have been accidental from the containing vessel.

A singular fact was communicated to me by D. Davis, Esq., Medical Inspector for Bristol, which was (at any rate, to me) quite new. Of course, all chemists are aware that when citric acid is *fused* with potassa it is decomposed into oxalic and acetic acids, thus:—

$$\underset{\text{Citric Acid.}}{C_6H_8O_7} + H_2O = \underset{\text{Oxalic Acid.}}{C_2H_2O_4} + \underset{\text{Acetic Acid.}}{C_2H_4O_2}.$$

But when liquor potassæ is mixed with common lemon-juice *in the cold*, oxalic acid may be detected in a few days.

When lemon-juice is carefully evaporated it yields a rich brown extract, which is very peculiar both in smell, taste, and appearance, so much so that any one accustomed to make these experiments can in one moment tell whether or not it is a genuine juice.

An ounce of lemon-juice will average 27 grains of dry extract per ounce. After a certain point the extract becomes carbonized, having a rich brown color and pleasant smell. This is owing to its partial decomposition into acetone, carbon, carbonic acid, carbonic oxide, and aconitic or pyrocitric acid.

$$\underset{\text{Citric Acid.}}{2(C_6H_8O_7)} = \underset{\text{Acetone.}}{C_3H_6O} + 2CO_2 + CO + \underset{\text{Aconitic Acid.}}{C_6H_6O_6} + 2H_2O.$$

It seems quite impossible to evaporate the juice to dryness without decomposition.

During the first six months of the present year a great number of samples of commercial juice were examined; the following are a few of them procured from London, Bristol, Liverpool,

Leith, Birmingham, Newport, Cardiff, Southampton, etc., besides samples obtained from wholesale and retail druggists and importers of foreign produce. Some were plainly artificial, a few contained sulphuric acid, but most of them were merely diluted with water. The greater number of those obtained from the retail shops were artificial, and in no single instance stronger than twenty-four grains per ounce.

The following table is the result of twenty of these analyses made of samples from the places before mentioned. They are calculated as grains per fluid-ounce :—

No.	Citric Acid.	Gum and Sugar.	Sp. g.	Adulterant, and Remarks.
1	25	3·10	1·026	Watered.
2	30	3·90	1·032	Artificial.
3	20	2·00	1·021	Watered.
4	28	2·00	1·028	Watered.
5	35	5·80	1·037	Artificial and Cane Sugar.
6	14	2·00	1·023	Artificial and Tartartic Acid.
7	15	1·99	1·016	Watered.
8	18	3·00	1·019	Artificial.
9	19	9·00	1·027	Artificial.
10	42	3·45	1·043	Genuine.
11	28	2·85	1·029	Watered.
12	19	13·52	1·022	Artificial.
13	42·22	6·50	1·044	Genuine.
14	32·22	3·90	1·033	Genuine.
15	43·90	10·50	1·048	Genuine, but colored with some extract.
16	29·5	2·90	1·030	Genuine, but reduced.
17	5·3	——	1·028	With Sulphuric Acid and Sugar.
18	40	3·60	1·042	Genuine.
19	32	3·44	1·033	Genuine.
20	30	1·59	1·030	Artificial.

Thus, it will be seen, that in no article was adulteration carried on to a greater extent than lemon-juice, and prior to the present Act a genuine sample was hardly ever obtainable.

The juice keeps its strength better separated from the fruit than in it. A good sample may be kept for years without sensible diminution of its acid, especially if fortified with spirit.

The cell-structure of the fruit seems to be the chief source of the fermentative matter, especially that part of the mesocarp that forms what is commonly called the white of the rind.

The ingredient in the juice, which is the therapeutic agent, seems to be a matter of dispute among medical men. Those who advocate Dr. Garrod's views—that it resides in the potash

—must have a homœopathic idea of its value, and plenty of faith. The analyses of many specimens of ash show only $\frac{3}{10}$ grain of potash per ounce. Others, with Dr. Tanner, and I think with more reason, rely on the citric acid as the chief means for curing scurvy.

The molecules of citric acid are very remarkable for their tendency to change, especially when sugar or gum is present. As remarked before with regard to lemon-juice, so a solution of crystallized citric acid cannot be evaporated to dryness without decomposition, even with a very gentle heat.

Like all seaport towns, a great many cases of scurvy are present in Bristol, and I have the authority of several of our leading physicians for saying that they find the crystallized citric acid as efficacious as lemon juice (especially with fresh meat and vegetables) in curing that disease.

But as this question is more in the sphere of physicians than the pharmaceutist, it had better be left in their hands for solution.—*Lond. Pharm. Journ.*, Oct., 1868.

Editorial Department.

BAD DRUGS—WANT OF UNIFORMITY IN OFFICINAL PREPARATIONS:—SHOP INSPECTION BY THE BOARD OF HEALTH PROPOSED AS A REMEDY.—To the pharmaceutist and physician who has the true interests of pharmacy and medicine at heart, the present methods of supplying the demand for officinal preparations are calculated to create grave doubts of their adequacy to meet the wants of the practitioner, or to enable the pharmaceutist to do his just duty as the custodian and dispenser of the preparations of the Pharmacopœia.

Among the causes which lead to this opinion are a tendency to the relinquishment of the business of making preparations in the shop; excessive competition among "manufacturing pharmaceutists," by which uniformity is invaded in the strife for lowness of price; ignorance on the part of physicians of the remedies they prescribe; and ignorance and unscrupulousness on the part of a large number of dispensers in reference to the quality of the medicines they sell. When a pharmaceutist makes his own preparations he knows what they are, and is responsible for their quality; he graduates the supply to the demand, and thus renews his

stock as often as it is needed. But when once he leaves this true standpoint and abandons his proper business as a *preparer* as well as *dispenser* of medicines, he is at the mercy of circumstances over which his control is very limited. The pharmaceutist who is daily engaged in preparing the medicines he vends, becomes so intimately acquainted with their properties that he can form a fair judgment of their quality when made; but when he foregoes this duty, and depends on the druggist and manufacturer for all the more important preparations of the Pharmacopœia, he blunts this power of judgment, if once possessed, to a large extent; and when he has never acquired it practically, he cannot trust his senses to the same degree, even supposing he sets out with a supply of good preparations. This evil applies most largely to the extracts, fluid extracts, powders, sugar-coated pills, and the so-called concentrated remedies of eclectic origin, some of which are getting into use.

The fixed and well-marked properties of chemicals, organic as well as inorganic, afford criteria for determining their quality always within reach of the qualified pharmaceutist; but the other classes of preparations mentioned, together with tinctures, wines and other galenical preparations, are much more difficult to assay. It is of the utmost importance to have reliable processes in the Pharmacopœia, but of what avail are they if not followed. The formulæ of that work are gotten up for the use of the pharmaceutist—in his shop or laboratory—on a moderate scale, and are hence often not so well suited to large manufacturers. This is a constant source of alterations in manipulation and in solvents, so that the time may be shortened or the expense decreased; rarely is the plea to make a better preparation. Unfortunately the formulæ of the present Pharmacopœia were made when alcohol was worth fifty cents a gallon, which, after the war-tax was placed upon it, rendered its use in the proportion required almost an impossibility by manufacturers, who, in order to keep down the cost of their preparations, resorted to all sorts of modifications of the methods of extraction. The consequence is that hardly any two of the large manufacturers of fluid extracts adopt the same process, and preparations of the same name vary exceedingly in sensible properties, specific gravity and medicinal power, as made at one and the other laboratory. Another objection is the working up of inferior drugs into extracts and fluid extracts, the manufacturer resting satisfied if he puts in the quantity of the drug called for. Then the deterioration arising from long keeping, exposure, due to excessive production, etc. As to the remedy for all this we see none but the adoption of means to insist on the authority of the Pharmacopœia on the one hand, and to provide legal aid in demanding qualification from the dispensers. It appears to us that the medical profession are, to a large extent, accountable for the evils we have pictured, in so far as they have encouraged these departures from authority on the part of wholesale manufacturers. It is proverbial how easily physicians are influenced by

novelties and flattered by pharamceutists into the approval of preparations which have but few real claims to merit. This arises in a large degree from an imperfect acquaintance with that part of their profession which bears on pharmacy. We have been led into this course of thought by a movement commenced in Cincinnati, which is yet, so far as we know, in an undeveloped state, called forth by the reading of a report by Dr. Unzicker, on new remedies and pharmacy. In the comments on this paper, Dr. Thacker suggested the appointment of an inspector of drugs by the Board of Health, giving as his reasons the impurity of the preparations and drugs sold in Cincinnati, believing it hurtful to the public health, and a proper subject for the Board to act upon. Much as we desire reformatory measures, we very much doubt the policy of referring such a power of surveillance to the boards of health, as they are usually constituted.

In evidence of the correctness of this opinion, we may state that a committee of the Cincinnati Academy of Medicine has already presented a recommendation to the Board of Health of that city (see page 382 *Philada. Med. and Surg. Reporter*, Oct. 1868,) asking the appointment of an inspector of drugs, whose duty shall be "to examine and test all such articles as are kept in drug stores, and that are used in any way or manner in compounding or preparing medicines, or used as remedies for the cure of diseases. All [wholesale] drug stores located within the city limits should be subject to inspection, and all retail establishments shall be inspected at least twice each year." Following this is a long account of the details of the proposed inspection, which is to include druggists, pharmaceutists, quack medicine makers and venders, and drug mills, and includes the weights and measures, the observance of the poison laws and the qualifications of clerks, and winds up with the information that each inspection of a retail store is to be two and a half dollars, of a wholesale, ten dollars, each, and of a patent medicine vender, twenty dollars each. What a fat position this office would afford for unsuccessful members of our profession, who, whilst they had not sufficient knowledge to gain success when in business, could doubtless analyze and assay drugs, medicines and quackeries by intuitive perception, with a rapidity and success dependent on the circumstances the case offered. With equal propriety, we think boards of health might proceed to appoint examiners, whose duty it should be to inquire into the qualifications of all doctors to practice medicine, including their ability to write legibly and to recognize the medicines they prescribe.

It will be much better for pharmaceutists to take the initiative by reforming themselves by aid of a salutary educational law, making the diploma of a responsible chartered institution necessary to all who practice pharmacy or sell poisons by retail. The American Pharmaceutical Association at its last meeting appointed a large and able com-

mittee to carry out its views in regard to State laws bearing on pharmacy, and we may look forward to the report of this Committee, in September next, with hopeful interest.

DEATH FROM ATROPIA THROUGH THE IGNORANCE OF AN APOTHECARY, AND THE BAD WRITING OF A PHYSICIAN.—On Friday, the 6th of November, the coroner's jury, in Philadelphia, rendered the following verdict:

"From the evidence elicited before us, we find that Mrs. Sophia Hecht sent to the drug store of Henry A. Bower, north-east corner of Sixth and Green streets, on Tuesday morning, November 3d, 1868, to have a prescription calling for four cathartic pills, which had been renewed several times before. These pills were taken by the deceased. Soon after severe and alarming symptoms came on. Physicians were called, when it was discovered that Joseph H. Bower had, by a mistake while compounding the prescription, substituted atropia, a deadly poison, for assafœtida.

"We, therefore, find that the said Sophia Hecht came to her death from a narcotic poison known as atropia. We also severely censure Henry A. Bower for allowing an incompetent person to compound prescriptions at his store, and deprecate the practice of renewing prescriptions from the file."

The facts of the case briefly are these: Dr. Phillip De Young prescribed an anti-billious dose of four pills, containing two grains of assafœtida. It was renewed several times correctly, when it fell to the lot of Joseph H. Bower to dispense it again. The word assafœtida, not plainly written, was abbreviated, and by some unaccountable impulse was read *atropia*, and the dose of four pills, containing two grains of that alkaloid, dispensed apparently without a thought as to its poisonous nature and excessive amount. According to the evidence of Dr. H. C. Paist, the only reason offered by the young man was that the price marked on the prescription was such as would be asked for such a quantity of atropia! and he appears to have ignored altogether the train of reasoning which every competent dispenser would have instituted, before he dispensed so potent a substance for internal use on the assumption that it was ordered. No good or sufficient excuse can be offered in this case; for we take the ground that, if the physician had ordered atropia, a competent pharmaceutist would not have dispensed it. His own sense of responsibility would have prevented it. The actor in this case, by his own admission, seems wholly incompetent to dispense prescriptions, and a great responsibility rests with his employer, if it be true that he delegated his business, during absence from the city to such a substitute. On the other hand, we believe the mistake would not have happened if the prescription had been properly written; and the event is a warning to many physicians to use more care in this part of their daily duty, that they may avoid the responsibility of causing these sad accidents. The deprecation of the jury regarding the renewal of prescriptions is uncalled for, has no bearing on the case, and would have been better if applied to the practice of *abbreviating* important words in these responsible documents.

Now what is the remedy? what influence is sufficiently potent to reach this crying evil—incompetent dispensers? Education and training in a Pharmaceutical College, under the guarantee of the diploma (subject to the action of the common law for neglect of duty). Such an institution has been in operation in this city for nearly half a century. It teaches the history and quality of all drugs and their active principles; the manner of making and dispensing medicines, and the chemical laws and principles which govern the processes employed. We have carefully looked over the annual class list of this School of Pharmacy for eight years past, and do not find the name of the young man who committed this unfortunate error. Had he attended that school, in all probability this sad calamity would not have happened. A wholesome public opinion should demand that those to whom the life and death business of dispensing is committed, should be properly educated and trained for the service. That poisons are necessary agents in the cure of disease is admitted in all systems of medical practice. In England, where accidents from poisoning are more frequent than in this country, and where, until recently, the greatest latitude existed in the sale of poisons by druggists and grocers, the authority of Parliament has at last interfered, and by an act passed in July last, made it obligatory, after the first of January, 1869, on every person not then in business, who sells any of the poisons indicated in an appended schedule, to pass an examination as to qualification for that service, by a board of examiners appointed by the Pharmaceutical Society of Great Britain. This is a great step in advance as regards that kingdom, and was rendered possible by the widespread influence and able management of the Pharmaceutical Society in taking a firm stand for the right in all matters pertaining to pharmacy, causing the government to have confidence in their execution of the delicate and responsible duty of conducting the examinations. In the present state of pharmaceutical institutions in the United States, it is not probable that any such universal power will be granted by State Legislatures, much less by Congress, to any one institution now existing; yet this should not discourage the friends of progress. Let colleges or societies be established in every city; let these join their efforts, through the American Pharmaceutical Association, and eventually they will be able to influence Congress to legislate for the security of life in the sale of poisons, just as it now does in reference to the management of steamboat boilers and other sources of danger to the public health and life. The preliminary steps are already taken to exert an influence on State Legislatures by a committee of the Association.

Our School of Pharmacy.—On the 7th of October Prof. Edw. Parrish opened the courses at the School of Pharmacy, at the new hall of the Philadelphia College of Pharmacy, in a general Introductory, chiefly occupied with a history of the rise and progress of the institution, em-

bracing many interesting facts throwing light on the various movements and individuals connected with its origin. It had been our expectation to print this address in full, in several consecutive numbers, but it has been deemed best to publish it in pamphlet form, in connection with a general report of matters pertaining to the College. The Class this season numbers 179, which is the largest ever convened under the auspices of the College. The annual catalogue of the class, at page 94, will give the reader information in reference to the sources whence the students come and who are their preceptors. The school opened before the lecture rooms were finished, and several weeks elapsed before they were quite ready. We have no hesitation in saying that no more comfortable and better lighted lecture rooms can be found in this city. Their capacity is about double those of the old building (viz., 350 seats), and the seats are unusually comfortable. Owing to the delay of the mechanics in completing many of the appurtenances, and the painting, the professors labored under many disadvantages during the first two months of the course, but now all is comfortably arranged. Owing to the same cause, the library, cabinet and herbarium of the College are yet mainly in boxes, but in a few days, it is hoped, the several committees having them in charge will be able to replace them in the cases, which have been repainted. As yet no steps have been taken to furnish the practical laboratory; this delay was anticipated, and it has been deemed far wiser to proceed with deliberation, than by haste to fail in making a judicious beginning.

Pharmaceutical Education in England.—At the monthly meeting of the Pharmaceutical Society held on October the 7th, 1868, occasion was taken to inaugurate the lecture season of the School of Pharmacy by the public announcement by the professors of the results of the previous season, by the conferring of medals and certificates of honor on the most successful students in each branch, and by an address introductory to the coming courses by Mr. Henry B. Brady, of New Castle-on-Tyne. There does not appear to have been a diploma issued by the Pharmaceutical Society granting a degree to the holder, but we presume a certificate of successful examination has been given to the candidates who pass the major and minor examinations generally, reserving to the three most successful students the reward of prizes and certificates of merit and honor. There is also the "Pereira medal," which is given for the best examination in Materia Medica. The practice of offering a special reward of honor to the student has a stimulating influence on a considerable portion of a class, yet in the absence of a diploma the effect is discouraging to the remainder. As examinations are now made obligatory on all who hereafter enter the ranks of pharmacy, either as "chemists and druggists" or "pharmaceutical chemists," it is probable that diplomas will issue granting the use of the names as titles under which to practice pharmacy.

The address of Mr. Brady, as published, is an admirable and appropriate effort to impress the gathered pupils of the coming session with the importance of earnest labor. He cautions them against superficiality —urges them to be *thorough*, and to strive until they master the principles or laws of that which they engage to attain. We would like to print the whole address for its intrinsic merit were it possible to accord the space. Through an esteemed correspondent in London we learn that "the Pharmacy Act" will do excellent service to the cause of pharmaceutical education. Enforcing examination of every future pharmaceutist, it will bring all within the influence of systematic training, and thus fan into the flame of knowledge any spark of curiosity or wonder existing within the brain of a candidate for the legal titles of "chemist and druggist" or "pharmaceutical chemist." Already the school of pharmacy in connection with the pharmaceutical society is fuller than in any previous session; nearly 100 students are attending the lectures on chemistry, pharmacy, botany and materia medica, while nearly 50 are working daily at practical chemistry for periods varying from three to ten months. Before the end of the session it is expected that from 70 to 80 pupils will have occupied benches in the laboratories. Classes for study are also being formed in many of the provincial towns in which opportunities for pharmaceutical education did not previously obtain." This is encouraging to those disinterested pharmaceutists whose generous and persevering efforts have brought it about. They have yet much land to plow, much seed to sow, and afterwards long continued and tedious labor to bestow in extirpating the weeds, quackery, ignorance and bad habits, which grow faster than their seedlings. Nevertheless we hope they will persevere and in the end obtain the mastery, by giving to England a corps of well-educated and respectable practitioners, with a freedom of action in accordance with British law, and without those numerous legal restraints that mark as well as mar continental pharmacy.

Pharmaceutical Society of St. Petersburg.—An invitation to the honorary and corresponding members of this Society to be present at the celebration of its fiftieth anniversary, on the 3d of October, 1868, at St. Petersburg, signed by the *Director*, John Pfeffer, and Secretary, Dr. A. Casselman, was duly received by the Editor, and is hereby acknowledged.

Our Journal.—The present number commences the *forty-first* volume of this Journal. It has been delayed about ten days beyond the usual time of publication by the printer, owing to the interference caused by the Proceedings of the Association being printed in the same office. This number is rich in original articles, especially those read before the late meeting of the Association, and credited to its proceedings, which will make amends for the delay. We will take the oportunity to earnestly remind our subscribers that the subscription price of this Journal is due in advance; it has never been published with a view to profit, and

the Committee are constantly out of pocket by the want of promptness of our patrons. Hoping better things for the future we commend our labors to their favorable consideration.

List of the Contributors to the Building Fund for the New Hall of the Philadelphia College of Pharmacy. (*Continued from Page* 565. vol. xl.)

Wilson & Jones, (additional, omitted by mistake)	$31 00	Thos. A. Lancaster	50 00
Ephraim K. Smith	10 00	French, Richards & Co	200 00
S Mason McCollin	10 00	Carpenter, Henzey & Co	100 00
C. E. Haenchen	10 00	Samuel F. Troth	100 00
Emilius Herwig	10 00	Thos. S. Wiegand	50 00
John M. Maisch	50 00	Samuel Simes	25 00
C. B. Linn	10 00		$1,206 00
Dr. Geo. B. Wood	500 00	Previously,	6,281 50
John W. Simes, Jr.	50 00	Total contributions,	$7,487 50

Advertising Sheet.—Our readers are invited to examine the schedule of prices for advertisements commencing the sheet. The rates have been somewhat advanced, having been far lower than those of any other Journal offering the same advantages.

Report of J. Ross Browne on the Mineral Resources of the States and Territories West of the Rocky Mountains. Washington, Government Printing Office, 1868; pp. 674, octavo.

Report of James W. Taylor on the Mineral Resources of the United States East of the Rocky Mountains. Washington, 1868; pp. 72.

The object of the Government in eliciting these reports seems to have been to condense, in a reliable and systematic manner, the numerous floating facts and statistics, and to ascertain the real condition of the mining interests and resources of the great region west of the Rocky Mountains. It was sought to get at the full history, early and late, of the mining interests of the Pacific coast; of the geological formation of the great mineral belts; of the various systems of mining in use; the character of the population engaged; the relations of mineral and agricultural lands and of fuel existing, and of water power available; of salt beds and deposits of soda, borax, sulphur, and other minerals; the character of climate, altitude, etc.; the number of banking institutions in the mining towns, with their facilities for assaying and refining bullion and for its transportation; the various means of intercourse by roads, telegraphs, and post-offices; the necessity of assay-offices and public depositories; the local mining laws and customs regulating the holding and working of claims; and finally the number of ledges opened, the character of the soil in mining districts, and its adaptation to the support of population.

The reporter, Hon. J. Ross Browne, (now Minister to China,) seems to be eminently qualified for his task, and has produced, by the aid of a corps of gentlemen to whom chiefly he gives the credit due, a work that

will be of great use to all who desire information on this important national interest.

The collection and transportation of treasure of course constitutes the main item in this report, that most interesting to the government, and though we have but little space to spare, the following tabular view of the yield for 1867 and the total yield since 1848 is given:

States.	1867.	Total since 1848.
California,	$25,000,000	900,000,000
Nevada,	20,000,000	90,000,000
Montana,	12,000,000	65,000,000
Idaho,	6,500,000	45,000,000
Washington,	1,000,000	10,000,000
Oregon,	2,000,000	20,000,000
Colorado,	2,500,000	25,000,000
New Mexico and Arizona,	1,000,000	5,000,000
	$70,000,000	
In jewelry, plate, spoons etc., retained in circulation on Pacific coast,		45,000,000
Total,		$1205,000,000

Mr. Browne adds to the above a sum of 50 millions to represent treasure buried, concealed and otherwise unaccounted for, making 1255 millions.

Besides the precious metals the development of other minerals has been very considerable, among which the principal are copper, iron, quicksilver, coal, marbles, lime-stone, dolomite, hydraulic cement, granite, gypsum, sand-stone, soap-stone, clays, kaolin, pipe-clay, coloring earths, sand for glass, plumbago, salt, asphaltum, petroleum, borax and sulphur.

These are only a few of the minerals that may be utilized in the future, when an increased population will extend the development of the strata now searched only for the precious metals. Of latter years the agricultural and horticultural interests have made strides in proportion to the mineral, producing a large excess of bread stuffs and fruit. Wine-growing has already been fairly started, and the axe has long since opened up the timber trade on the mountain slopes of the upper vallies.

This simple enumeration gives an earnest of what elements of future wealth and growth are embraced in the wonderful region noticed in this report. We can well remember, more than thirty years ago, when Mr. Nuttall and John Townsend started for Oregon, overland, on a botanical expedition, that whole region from the Straits of Fuca to Monterey, except here and there along the coast, was a vast wilderness. Then came the overland expedition by government, the Mexican war resulting in the acquirement of California and New Mexico, with the magic development of the gold placers following in 1849, which resulted in precipitating on that coast the most heterogeneous mass of enterprising adventurers that the world had ever witnessed. Of this preliminary mixed population our author speaks as follows, in closing his report:—

"The tendency of this pursuit is, at first, to attract a reckless and adventurous population, whose disregard of conventional restraint leads to the assumption of risks and to bold and hazardous undertakings, by which new countries are most rapidly opened up to settlement and civilization. Providence so ordains it that the superficial treasures of the earth designed to attract this enterprising class soon disappear, and a higher order of intelligence is required, and a more permanent condition of things established. It is only necessary to look back over the past eighteen years to find in the advancement of this vast region, known as the Pacific slope, the strongest possible refutation of the assertion that mining is inimical to the welfare of the people. Looking forward to the future who can predict the high condition of prosperity likely to be attained by the new States and Territories eighteen years hence? With trans-continental railroads and telegraph lines binding the Atlantic to the Pacific; with more roads and lines traversing the country north and south; with the commerce of Asia pouring its treasures into our seaports; with an export trade commanding the whole eastern world; with a probable coast line stretching from Behring Straits to Cape St. Lucas; with innumerable flourishing cities and seaport towns; with an agricultural population numbering thousands where they now number hundreds; with busy manufactories scattered over the land; with churches, schools and colleges every where throughout the mountains and valleys. All of these many of us may live to see, but few can imagine the magnificent future that lies before us."

The Medical Formulary. Being a collection of prescriptions derived from the writings and practice of many of the most eminent physicians in America and Europe, together with the usual dietetic preparations and antidotes for poisons; to which is added an appendix on the endermic use of medicines, and on the use of ether and chloroform, the whole accompanied with a few brief pharmaceutical and medical observations. By Benjamin Ellis, M. D., &c. Twelfth edition, carefully revised and much improved by Albert H. Smith, M. D., &c. Philadelphia, Henry C. Lea, 1868; pp. 374, octavo.

Ellis's *Medical Formulary* has long been an established text-book to the prescriber, and amid the numerous works of an allied character, has held its ground remarkably. This has arisen partly from the excellence of the original issue, and partly from the carefully conducted revisions it has undergone at the hands of its several editors since the death of the author, Dr. Morton, Dr. Thomas, and now Dr. Smith. The new matter in the present edition is considerable, to make room for which several obsolete formulas have been omitted, and the new formulas have been enclosed in brackets, to distinguish them. The editor has added to this edition two new classes, viz., antemetics and disinfectants, besides many additions in other classes of remedies, which add considerably to the size of the volume. Among the new formulæ we observe

"*Soda Mint.*

R.	Soda bicarbonatis, . . .	ʒij.
	Spt. ammoniæ arom., . . .	gtt. xl.
	Aq. menthæ pip. . . .	fʒviij.
	Misce.	
	Signa. Dose, a teaspoonful for an infant."	

"*Dr. J. F. Meig's anæsthetic pills.*

℞. Morphiæ sulphatis, ... gr. viij.
Camphoræ, ... gr. xx.
Olei cajuputi, ... gtt. x.
Pulveris tragacanthæ, ... gr. v.
Ext. gentianæ, ... gr. xv.
Syrupi acaciæ, q. s.
Misce. et div. in pilulas C.

Take 2 or 3 at a dose, to be repeated every half hour till relieved."

"*Compound anodyne pill.*

℞. Ext. cannabis indicæ,
Ext. belladonnæ,
Ext. nucis vomicæ, ... aa. gr. ij.
Ext. valerianæ,
Quiniæ sulphatis, ... aa. gr. xij.
Misce. et div. in pilulas xij.

Signa. Take one pill every 2 hours until relieved (of simple neuralgia, especially cephalagia from cerebral irritation, or excessive mental activity.")

A treatise on the Principles and Practice of Medicine; designed for the use of practitioners and students of medicine. By Austin Flint, M. D., Prof. of the principles and practice of medicine in the Bellevue Hospital Medical College, N. Y., &c. Third edition, thoroughly revised. Philadelphia, Henry C. Lea, 1868; pp. 1002, octavo.

The second edition of this work, published less than two years ago, was favorably received by the medical public, both at home and abroad. The endeavor of the author to prune it from redundancies and add to its practical character from the lines of his clinical experience, has been very successful in the present or third edition, gives it the freshness of a new work, and claims for it the attention of medical practitioners. Speaking of pulmonary tuberculosis, the author says:

"The hypophosphites were introduced some years since, by Dr. Churchill, as a specific remedy, the pathology of the disease being supposed to involve a deficiency in the system of phosphorus, and this element existing in the hypophosphites in a form readily assimilable and in a low state of oxidation. Experience has abundantly shown that the disease is not arrested by the introduction of phosphorus into the system; in other words, that this has no claim to be considered a specific remedy; but it appears in some cases to be highly useful as a tonic remedy."

The work is gotten up in the usual good style of the publishers, bound in leather. Price, in this form, $7.00; in muslin, $6.00.

Criminal Abortion; its nature, its evidence, and its law. By Horatio R. Storer, M. D., LL. B,, and Franklin Fiske Heard. Boston: Little, Brown & Co., 1868; pp. 215, octavo.

To the non professional reader this work embodies much to cause surprise that there exists so much latitude in opinion in regard to the production of abortion in the minds of a large number of women, married and single, and of men, in regard to its criminality. Like the Lacedæ-

monian idea of theft, that it was only disgraceful when discovered, these practical and theoretical abortionists esteem it all right if it can be secretly conducted.

The work is divided into two parts. First, from the standpoint of medicine, and second, from the standpoint of law. The first discusses the criminality of abortion—its frequency and causes—its victims—its proofs—its perpetrators—its innocent abettors—and the obstacles to conviction. The author, after speaking of the professed abortionists and those who issue quackeries to aid in the work those inclined to produce it, says:

"Druggists, as a class, are little more than the confessed agents of these villains. Even should they not directly recommend their nostrums, as however is frequently the case, they almost universally keep them on sale, labelled to catch the eye, and placarded on the walls."

This is a sweeping charge, and in many instances wholly untrue; for there are many pharmaceutists that we can point to who habitually refuse to keep nostrums of the kind described, or to sell simple drugs known to possess emenagogue properties when they have any reason to suppose them to be for improper use. Yet the common habit with many to keep a full assortment of quackeries, may render them obnoxious to the charge of the author. Pharmaceutists cannot be too careful in dispensing to avoid abetting, unintentionally though it be, this great evil. If the author's statements and statistics be true, this evil is already largely influencing the rate of population in New England and other parts, and is more prevalent in Protestant, than in Catholic communities. The volume possesses great interest, and deserves attention from both professional and general readers.

Proceedings of the British Pharmaceutical Conference, at the fifth annual meeting, at Norwich, 1868. London, pp. 86, octavo.

We acknowledge the reception of this work from Prof. John Attfield, one of the general secretaries. We have anticipated it in our last issue, from the pages of the Pharmaceutical Journal. In addition to what has been there said, we quote the following from the prefatory notice:

"A list of subjects suggested for research is sent to members early in the year. Resulting papers are read at the annual meeting of the members; *but any new facts that are discovered* during an investigation, may be at once published by the author at any meeting of a Scientific Society, or in any scientific journal, or in any other way he may desire. In that case he is expected to send a short report on the subject to the Conference."

This is a liberty sadly needed in our Association rules. No matter how important a discovery may be embodied in an article read at a meeting, the author has to wait the slow progress of the annual volume for his date of priority, and may loose altogether his right by anticipation in the journals by another discoverer. We hope this rule will be altered. The next meeting of the Conference will be in Exeter, in August. The annual subscription is five shillings.

Physicians' Medical Compend and *Pharmaceutical Formulæ*. Compiled by Edward H. Hance. Philadelphia, published by Hance, Griffith & Co., 1868; pp. 208, 12mo., from the editor.

This is another addition to the class of books that have been issued of late years by manufacturing pharmaceutists, the main object of which is to advantage business by advocating the practice of making the weaker pharmaceutical preparations of a drug from its fluid extract, stating in the preface that when such preparations are made with the fluid extracts of the firm issuing the book, they have the strength directed by the United States Pharmacopœia. Received just as we are closing our last form, we have not examined it very critically, yet sufficiently to say that it embodies much information in reference to formulæ, doses and many therapeutic hints, together with a special chapter on poisons and antidotes, intended for emergencies. Notwithstanding these merits and the excellent typography and binding in which it is issued, the book is marred by the titles to the preparations, being a hybrid of English and Latin in most instances. We feel bound to again enter our protest against this class of books, as inimical to the true interests of pharmacy; *Firstly*, as not yielding practically, in many cases, the preparations of the Pharmacopœia; *secondly*, in encouraging an imperfect and unresponsible practice of pharmacy, wherein the dispenser has no means of assuring himself of the quality of his preparations, and depriving his apprentices of the laboratory practice that is their due.

Announcement of the fourth annual course of instruction in the St. Louis College of Pharmacy. Session 1868–69.

By an accidental oversight, this pamphlet was not noticed in either of our previous two issues, so as to be in time for those readers of this Journal who might have been inclined to attend that school. We regret this, as it has always been our wish to notice such announcements in due season. We will now say that the course commenced October 1, 1868, and will continue till March 1st, 1869. The branches taught are materia medica, medical botany, theoretical and practical pharmacy, and general chemistry, all considered with special reference to the requirements of the pharmaceutist. The course of materia medica and medical botany, by Prof. Potter; pharmacy by Prof. Primm; and chemistry, by Prof. McArdle. Fees for the course, $30.

Annual Report of the Surgeon-General of the United States Army, 1868. Printed at the Surgeon-General's office. From Surgeon-General Barnes.

We learn from this report that the disbursements during the year ending July 1, 1868, were $1,756,608.27, of which more than a million was for payment of debts contracted prior to July, 1867. It also appears that there were 131,581 cases among 45,000 white troops, of disease and wounds, being an average of nearly three cases to each man per annum;

and 14,616 cases among 4,775 colored troops, being an average of a little more than three cases per soldier. On the 30th of September there were 289 garrisoned posts in the several military departments.

Fowne's Chemistry. The London publishers announce a new edition of this text-book under the editorial supervision of H. Bence Jones, M.D., and Henry Watts, F.R.S. The arrangement and notation of the work have been altered to suit it better to modern science, but, as far as possible, its original simplicity has been preserved. It is to be hoped that the American publisher will now give the new edition, instead of the old obsolete volume that has been evolved, and *re*-evolved, without change.

Retinitis Nyctalopica. By Prof. D. Arlt, of Vienna. Translated with consent of the author, by J. F. Weightman, of Philadelphia. Philadelphia, Lindsay & Blakiston; pp. 23, 12mo.

The Physician's Visiting List for 1869. Eighteenth yearly publication. Philadelphia, Lindsay & Blakiston.

The omission to notice this annual in our last was accidental. It is not too late to say that the Physician's Visiting List retains the many qualities that have heretofore rendered it so good a friend to the practitioner, and deserves his patronage.

Catalogue of the Class of the Philadelphia College of Pharmacy,

FOR THE FORTY-EIGHTH SESSION, 1868-69.

With a List of their Preceptors and Localities.

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